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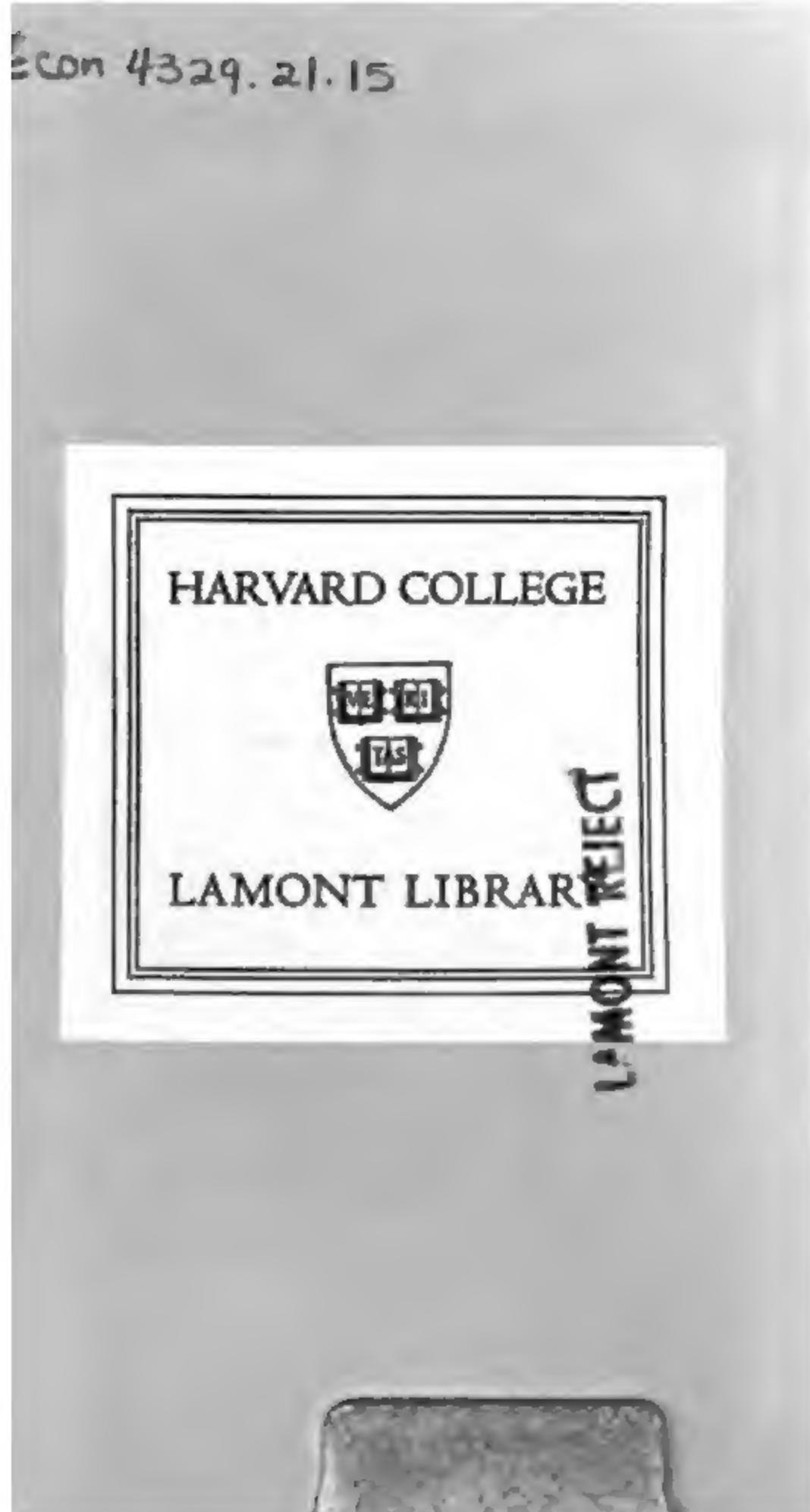
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ZIMMERMANN ON OCEAN SHIPPING

BY

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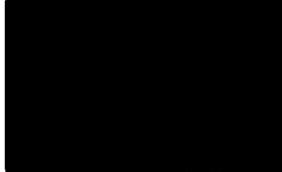
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To My Wife

*in appreciation of her devoted and unselfish assistance in the
preparation of this volume.*



PREFACE

A GREAT poet-philosopher said:

“What you inherit from your fathers,
Is not your own until you make it so.”

This is true of nations as well as of individuals. The War has left America a large fleet of merchant ships—a rich inheritance. Now America faces the task of making these ships her own, of assimilating them, of turning them into a great national asset—a glorious merchant marine. To accomplish this, a whole nation, too long one-sidedly absorbed in its interior developments, must turn its face from mountains and prairies to the sea. A whole people must become “ship-minded.” The hope of contributing his little share to this big end has inspired the writer throughout his task.

Others have heard the call. Men of the caliber of Edward N. Hurley and Robert E. Annin—to mention but two prominent names among recent writers on the subject of Ocean Shipping—are devoting time and energy toward spreading light on the subject. Big financial institutions like the Bankers Trust Company are appropriating large sums toward the same end. Organizations such as the National Marine League and the National Merchant Marine Association are working with redoubled vigor.

Under these circumstances, a new book which should be not only an addition, but a contribution, must possess distinct characteristics establishing its *raison d'être*. What impresses upon this book the stamp of individuality is the emphasis placed upon the interdependence of shipping and

PREFACE

commerce. The carrier lives for and on the cargo. The origin, destination and character of the cargo determine the route and type of the carrier. The functions and features of world shipping are understood only when placed against the background of ocean commerce.

Besides, the march of events in these after-war days is so rapid that an up-to-date book is bound to contain a wealth of new material, sufficient in itself to warrant its appearance.

It is hoped that the book will prove valuable both as a college text and as a handbook for business men.

ERICH W. ZIMMERMANN.

May, 1921.

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PART I
THE OCEAN



CHAPTER I

THE NATURE OF OCEAN TRANSPORTATION

Early history.—“*Navigare necesse*”—navigate we must—was a Roman slogan which reveals the early significance of water transportation. But while the use of ships is as old as the ages, its beginnings reaching into prehistoric days, ocean navigation in its proper sense is an achievement of relatively recent times. If we disregard the isolated efforts of a few adventurers, ocean transportation is less than 500 years old. Not until the invention of the compass and the astrolabe helped the early mariner to feel his way through the watery deserts, and not until a more seaworthy type of vessel than the Spanish caravel or Venetian galley had been evolved, could the era of world shipping dawn upon the earth. Before that, shipping had confined itself to the use of streams—the potamic stage—or, if venturing upon the sea, had not dared to go out of sight of the coast—the thalassic stage.

But when the spell was broken, the ocean, instead of being a barrier that “keeps lands apart,” that serves nations “in the office of a moat,” became a link binding distant peoples together in commercial, intellectual and spiritual intercourse. This was bound to revolutionize the mental attitude as well as the political, social and economic life of mankind.

Economic significance of ocean transportation.—To grasp the economic significance of ocean shipping we must understand the part that transportation in general

plays in our life, and must consider the peculiarities that distinguish water, and, in particular, ocean transportation from land transportation.

To the economist who defines production as "the creation of utilities," transportation is merely a phase of production. The ship, as the railway, is the servant of commerce, and the function of commerce is—to use a phrase coined by J. J. Hill—"to bring the goods from where they are to where they ought to be." To do so adds to their value; for the shift of place creates so-called place utilities, and, in most instances, also time utilities.

So far there is no difference between land and water transportation. They serve the same purpose, but differ greatly in the efficiency and cost of the service they render.

Cheapness of water transportation.—Generally speaking, water transportation is cheaper than land transportation. When Vasco da Gama discovered the sea route to India around the Cape of Good Hope, he brought down-fall and decay to Venice and Genoa, the great mistresses of the Mediterranean Sea, and in their places he enthroned Portugal, Spain, Holland and England. Why? Because the life blood of the Mediterranean trade centres was the commerce with the Orient which travelled over the old caravan routes until it struck the Mediterranean. When opportunity offered to carry the same merchandise by water, though thousands of miles out of the way, the arteries of land transportation were bound to dry up, unable to compete with the cheaper water transportation. To come down to modern times, we reproduce the following figures from Mulhall's Dictionary of Statistics.¹

¹ 1899 Edition, p. 301.

These figures represent the average cost (calculated for all countries) of transporting one ton of commodities over a distance of 1000 nautical miles:

By ocean	5 shillings
By canal	20 shillings
By railroad	100 shillings
By turnpike	300 shillings

An extreme case, illustrating the cheapness of water transportation, was that of a London merchant who in 1892 bought 200 tons of second-class flour in Liverpool. Sending it to London by rail was out of the question, although the London and Northwestern Railway rates for through carriage between the two places were so small as to do little more than pay the cost of movement; and the local sea rate was such a trifle less than the land rate that it paid the buyer to ship the flour from Liverpool to New York, and then from New York direct to London, at through long-distance rates.² To be sure, other factors besides the intrinsic cheapness of water carriage must have come into play to create this exceptional situation. It would be wrong to generalize from this specific case. For in the course of time, improvements in the technique of transportation by land and water widen or shorten the spread between the respective costs of carrier per unit.

Reasons for cheapness: buoyancy.—Among the reasons for the relative cheapness of water transportation, the physical property of water as compared with that of solid land is the most elementary and, at the same time, probably the most important. Experimentation has

² Lyde, *Commercial Geography*, pp. 44, 45.

shown that a horse which can draw a load of only one ton on a two-wheeled cart can draw a load of forty tons on a barge. The explanation is this; the water itself bears the burden so that only motive power is needed while on land an additional amount of power has to be supplied to overcome friction due to weight. To be sure science has reduced this friction to a minimum by the use of steel rails, ball bearings, lubricants, etc. If we, therefore, compare a modern railroad train with a modern steamship, we find that the relative efficiency of the latter is by no means forty times the efficiency of the train. A scientific comparison of these two most important means of transportation of the present age is rendered problematic by the modifications necessitated by storms and currents, etc., on the one hand, and grades and curves, etc., on the other. The fuel consumption reflects the consumption of energy. Statistics tell us that during 1916 the railroads of the United States consumed 0.06 pounds of fuel per ton mile while lake carriers consume only 0.029. Corresponding figures for ocean carriers would be interesting but they do not seem to be available.

Additional causes for cheap water transportation.- This difference in efficiency, however, is partly due to other causes besides the difference in the physical properties of the two elements, water and land. In the first place, the locomotive designer is handicapped as compared with the builder of marine engines, because the dimensions of the engines are limited by the gauge of the track, the width of the tunnels, the strength of the bridges, the angle of curves, etc. In a similar way the manufacturer of railroad cars labors under difficulties as compared with the shipbuilder. The necessity of breaking

up the space, which represents the carrying capacity of the train, into many independent units increases the deadweight or the tare far beyond the point with which the shipbuilder has to reckon. Here again the progress of science which has led up to a type of railroad car with a carrying capacity of 110 tons—which is considerably more than the average ship in George Washington's day could carry—and the evolution of the modern steamship to gigantic proportions, have reduced the respective costs of carriage, without however, essentially affecting the lead between land and water transportation.

Ocean haul longer than land haul.—The third factor which accounts for lower water transportation costs is the fact that the average haul on the ocean is so much longer than the average rail haul. The United States is a country of such dimensions and its natural resources are distributed in such a way that considerable quantities of bulk commodities have to be moved over long distances. Nevertheless, the average rail haul does not exceed 260 miles. In the absence of statistical data regarding the average haul in ocean shipping, an exact comparison is impossible. However, a glance at a map of the world which gives the distances separating the most important markets between which the bulk of the world's man-going tonnage plies, will convince the observer that the advantage again lies on the side of the steamship, and that this advantage is bound to be very considerable indeed. Without going into details of trade routes and merchandise currents, it will suffice to remember that the bulk of our cotton export crosses the Atlantic, that most all of Australia's wool travels practically half-way round the world, and that the products of Argentina's

fields and prairies and of Chile's mines cover from six to ten thousand miles before they reach their destinations. On the equator it is 10,000 miles across the Pacific Ocean; and in going from Vancouver to Hongkong mail steamers cover a distance of 6,500 miles.

Why do long hauls mean cheaper transportation than short ones? Everything else being equal, the terminal charges, that is, the expenses of handling the goods at either end of the voyage, are the same whether the cargo is carried ten miles or a thousand, but relatively speaking they amount to so much less when spread over the long haul as compared with the shorter.

Ocean transportation requires less fixed capital.—With all these points enumerated in favor of the ship, perhaps the most important still remains to be mentioned; namely, that before a train can pull out of New York to reach Yonkers, Chicago, or any other point, costly preparations must be made to render the feat possible. The right of way has to be acquired, the road-bed built, the track laid, stations erected and signals and safety devices installed—efforts which in the United States represent an average per mile investment of not much less than \$70,000. In England, the corresponding figure is not far from \$250,000.¹ On the other hand, the ocean beckons to the ship and is ready for use without any effort on the part of the ship-owner.

To be sure, the seas are charted and patrolled, coasts lighted, channels marked and improved, harbors deepened and piers and docks constructed, but usually at government expense. If we ignore the support given to

¹ See Johnson and Van Metre, *Principles of Railroad Transportation*, pp. 111, 112.

various governments during the early days of railroad history when generous land grants and other aids were proffered, no such contributions from public funds are available for the railroad owner in constructing his road; on the contrary, all equipment and improvements rest upon private investment. In contrast, the ship-owner benefits by the nation's eagerness to gain its share of ocean commerce, and profits by the wholesome rivalry which prompts competing cities to outdo one another in the effort to attract steamships to their ports. This, however, holds true only to the extent that the cost of harbor works and other improvements is defrayed by general taxation and not from pier leases, dues and other charges directly levied on the shipping business. This refers to terminal facilities. But the road-bed is furnished free. For so ample is the supply of water in the ocean, so wide its expanse, that the services rendered mankind by the sea in bearing the burden of its fleets, have remained a free good, free as the air that we breathe.

History of the freedom of the seas.—This bring us to the second point of difference existing between land and ocean transportation: freedom of the seas versus national regulation of land transportation. There was a time when man extended the principle of territorial sovereignty to his conquests on the watery deep. The Portuguese who discovered the sea route to India regarded it as forming equally as concrete a part of their colonial empire as did Brazil. Anybody who dared to navigate these newly "acquired" waters was treated as an invader or looked upon as one who poaches upon the preserves of another. Even the enlightened Montesquieu held as

late as the eighteenth century that a nation may cede sea to another as it may cede a strip of land. To-day such an idea is unthinkable; beyond the three-mile limit national sovereignty ceases and the law of nature prevails, limited only by a few more or less clearly defined more or less well understood and more or less efficiently enforced principles of international law.

Essentials of economically free seas.—While we leave it to the diplomats and the experts of international law to interpret, from the legal and political standpoint, the meaning of "the freedom of the seas," a phrase abused as often as it is used, an economic treatise on ocean shipping would be incomplete indeed if it left untouched the important subject of the economic restrictions imposed on ocean shipping. Even those who are at loggerheads as to the political meaning of "the freedom of the seas" usually agree that, certainly in time of peace, the seas have been and are free in the fullest sense of the word. If "freedom of the seas" means the right of a ship to cruise aimlessly about the high sea we are willing to agree with this view. But such freedom would be of little practical value. Our conception is that "freedom of the seas" in time of peace involves the following essentials:¹

- (1) General freedom of navigation, i. e., liberty to come with ships and cargoes to places in the territory of all nations.
- (2) National, i. e., equal, treatment as regards the stationing, loading and unloading of vessels in ports, docks, roadsteads and harbors;

¹ This enumeration follows in general the British interpretation as given in official documents.

(3) National treatment in regard to duties of tonnage, harbor pilotage, lighthouse, quarantine, or other analogous duties or charges levied for the profit of Government, public functionaries, private individuals, corporations or establishments of any kind;

(4) Prohibition of differential flag treatment.

British liberal policy explained.—These essential conditions have never been generally accepted by all the maritime nations. To be sure, since the middle of the last century the navigation policy of Great Britain, the leading maritime nation of the world, has generally followed these lines. It is based upon the great ascendency of the British merchant marine and the widespread character of the trade of the Empire, which make protection both unnecessary and undesirable. The main object of this policy was to obtain free access to the ports and the trade of foreign countries. Privileged treatment at home would have meant little to the British merchant marine, but would have afforded foreign countries an excuse for similarly discriminating in favor of their own vessels. "In view of its great size, the British merchant marine stood to gain more from free access to foreign countries than foreign flags stood to gain from free access to British ports; and conversely a policy of mutual restriction would for the same reason have caused more harm to British than to foreign shipping."¹

Under the influence of this British doctrine, and, furthermore, affected by the teachings of eighteenth cen-

¹ Reports of the Departmental Committee appointed by the Board of Trade to consider the position of the Shipping and Shipbuilding Industries after the War. London, 1918, p. 106.

tury liberalism, other countries, among them the United States, viewing the whole matter from a dollars and cents standpoint, allowed their carrying trade to pass under foreign, principally British, control.

Freedom never complete: cabotage reserved to nationals.—But even during the height of this period of extreme liberalism, certain restrictions remained. In the first place, with the exception of Great Britain, every prominent maritime nation of the world has excluded foreign shipping from participating in its coastal trade. And "cabotage," as coastwise trade is called in the technical language of shipping, is a wide term. A voyage from New York to Hawaii or from Riga to Vladivostok is considered a coastal trip, and is treated as such. Now the Australian Government wishes to extend that country's coastwise shipping laws to the trade with the newly acquired insular possessions in the South Sea. French shipping interests would like to see foreign ships prohibited from carrying goods between France and Indo-China. Our own coastwise laws are to be extended to include the trade with the Philippine Islands.¹ It is not improbable that other countries will follow these examples and thus limit further and further the free areas of the sea. Instead of the seas being made free, one of the economic consequences of the war seems to be a constant diminution in the number of trade routes open to all nations.

Other restrictions.—Besides this nationalization of "cabotage," numerous other cases of discrimination can be cited. A case in point is the French "Surtaxe

¹ See Merchant Marine Act, 1920, discussed in Chapter XXX.

d'Entrepôt," which is a special duty imposed on all goods not imported into France direct from the country of origin. This duty is a remnant of mercantilist days and represents an indirect discrimination against foreign shipping. France furthermore requires that foreign ships employ a special class of brokers whose fees amount to a substantial tax on shipping and overseas trade. France is not the only country to discriminate in favor of her nationals. Portuguese ships in Portuguese ports pay only one-half of the dues paid by foreign shipping.¹

Neo-Mercantile tendencies of to-day.—These examples show that entire freedom of navigation has not existed, and does not exist to-day. As we have seen in the case of the coastwise shipping laws, the tendency of to-day is toward further restriction, toward wider discrimination in favor of national shipping. Even in England, voices are raised in favor of flag discrimination. But our own case is a better example of the trend of the times. The Merchant Marine Act of 1920 in several of its provisions reminds us of the mercantilism of the Navigation Laws. We live in an age of neo-mercantilism, when national commercial policies are accepted or rejected on the basis of their respective bearing upon national power, on imperial aggrandizement—the League of Nations notwithstanding.

There is a certain danger of overstepping the proper limits in legislating in favor of national shipping. If all maritime nations were to insist that all their foreign trade should be carried in their own ships, we would have the amusing spectacle of seeing these ships meet in mid-ocean and exchange their cargoes. The best that the

¹ See Board of the Trade Reports, cited above, pp. 107-109.

advocates of a national merchant marine can hope and work for is that the ships of their nation should carry approximately half the imports and exports of their own country,¹ and share in the sea-borne trade of non-maritime nations to an extent in keeping with the commercial and political place their country holds among the nations of the world.

Freedom of the seas inseparable from freedom of international trade.—But this question of the "freedom of the seas" has a deeper meaning. It is inextricably linked with the wider problem of the freedom of international trade. For a ship, when viewed apart from the cargo it carries, is but a useless thing. What attracts it to a port is the paying cargo awaiting it there or an open market which welcomes the goods which it carries. Withhold the cargo and a port is closed to a ship as effectively as by a direct law forbidding it to enter. Shipping is but the instrument of trade and, on the whole, whatever limitations are placed upon trade have the tendency eventually to react upon shipping. Exceptions can be cited and the connection between cause and effect may often be blurred. But the tendency is there, nevertheless.

In a deeper sense, therefore, there can be no real freedom of the seas as long as there are colonial empires and protectionist countries—in short, as long as there is no freedom of international trade. There is no more reliable way of testing the liberality or exclusiveness of colonial and commercial policies than by analyzing their results.

¹ "Even England, whose vessels formerly carried 24 per cent of the international trade of nations outside the British Empire, carried at the same time only 52 per cent of her own trade."—E. N. Hurley, *The New Merchant Marine*, p. 274.

has openly pursued the policy of reserving the
with her colonies for her own nationals and her
g has followed the lead, but England has always
herself upon her unselfish policies in admitting all
exploitation and development of her colonial em-
Nevertheless, we find that the bulk of the trade,
en to a larger extent the bulk of the shipping, be-
ind with parts of the British Empire have been in
hands. This state of affairs is certainly not due
unwillingness of outsiders to participate. A care-
lysis of the treaties, laws, rules and regulations
; to inter-imperial trade and shipping, will reveal
handicaps placed upon non-Britishers to account
r comparative lack of success in cutting England's
n saying this we by no means wish to imply that
success on the seas has been simply the outcome
imination, past or present, in favor of British ship-
d trade. We do not wish to detract one iota from
its of Britain's great mariners and merchant princes.
; contrary, we have great respect for English
and perseverance and we sincerely wish that this
; might take a leaf out of the book of England's
nce and learn from the "Mistress of the Seas" the
of her success. If we refer in our illustration of
sea freedom to acts or laws of Great Britain more
tly than to those of other countries, this is only
in view of England's exceptional position as the
maritime nation of the world.

Oilum a case in point.—In order to illustrate what
n by trade advantages which react upon shipping
us limit the freedom of the seas, we may
e oil situation as a case in point. For rea-

sons inherent in the nature of the business, petroleum usually carried by those interests which control production or refining, or both. What is the situation with regard to the oil resources of the British Empire? Is the exploitation open to all? No. We quote from a report by Mr. Van H. Manning, Director of the Bureau of Mines, to the Secretary of the Interior, on "International Policies Affecting the World Petroleum Resources": "American oil companies are expressly excluded from doing business in Burma and a blanket concession of 9 years was given to the Burma Oil Company (Ltd.) in 1889, protecting this company from foreign competition. It is reported that recent legislation has limited the ownership of oil properties in India to British subjects. Non-but British oil companies are operating in India." It may be noted that Burma is the most important oil yielding region in British India. To quote further: "There is a decided national and nationalistic policy throughout the British Empire to favor and encourage British oil companies." "The development of a strong nationalistic sentiment among British oil companies is illustrated by the resolution recently adopted by the Lobitos Oil-field (Ltd.), which produces in Peru, and has recently acquired oil lands in Ecuador, to prevent the transfer of more than 20 per cent of the capital to foreigners."

In this connection the following extract from a recent speech of Mr. W. A. Harriman, President of the American Ship and Commerce Corporation which he made, before the Manufacturers' Export Association is of value:

"We are operating a service from New York to Alexandria and the Levant. . . . One of the important commodities which is imported from Alexandria is Egyptia

. This country consumes about one-third of the
ian crop. All the Egyptian cotton brought to this
y is to-day carried in foreign bottoms and is shipped
through European ports. Although we have been
ing the service for eighteen months, it has been
sible for us to obtain a single pound of Egyptian
for our bottoms. The shipment of the entire crop
trolled by a British Conference in which a number
tish shipowners participate. The British Confer-
nake a contract once a year with the Alexandria
merchants by which they agree to sell cotton only
and to route all their shipments over the Confer-
ines and the rate is fixed for the season. . . .
onsumer is not allowed to go into Alexandria and
s cotton f. o. b. and ship at the lowest rate he can
. Our efforts to obtain a share of this business by
ng both in London and in Alexandria has so far
insuccessful. The only result of our efforts last
was that the contract for this year's crop was made
onths earlier than it had been made the year before."
re does not seem to be much left of the old spirit
alism. For what is true of petroleum and cotton is
many other basic raw materials, particularly those
e used in the so-called key-industries. The only dif-
is that the causal nexus between the control over the
aterial—in other words, the cargo which ships may
—and over the ships themselves is not always as
and open as in the case of petroleum and of Egyp-
tton.

ard N. Baker's idea of the "freedom of the seas."—
could go a step further and say with Bernard N.
the late "Dean of American Shipping," that without

a fair distribution of the merchant tonnage of the world among the commercial nations, on the basis of the real freedom of the seas is unthinkable.¹ While it is true to exaggerate the importance of national control facilities for carrying exports and imports, the world is denying that the lack of ocean tonnage is a serious handicap in the international struggle for raw materials and markets.

The fuel situation.—There is one more important aspect of the freedom of the seas. We refer to the limitations put upon this freedom by the one-sided policy of Great Britain over the bunker supply, the coaling stations of the world, and in general over the way stations at which ships stop for supplies on long-distance voyages. This does not necessarily mean a limitation of the freedom of the sea. But it might. It is potential. It became actuality during the war. British Black Lists were forced by rendering obedience to British dictation as a prerequisite to the supply of bunker coal. Viscount Bryce wrote to the United States Ambassador:² "What objection can be taken to this course? It is Britain's right why should it be used to transport the goods of countries who are actively assisting our enemies?" But he

"There is indeed one preoccupation in regard to the use of coaling advantages by His Majesty's Government which, no doubt, is present in the mind of the Admirals, and which I recognize. I refer to the a-

¹ *Atlantic Monthly*, January, 1919.

² White Paper entitled "Further Correspondence between the United States Ambassador respecting the 'Trading with the Enemy (Extension of Powers) Act, 1915'."

sion that the potential control over means of transportation thus possessed by one nation might be used for the disruption of the trade of the world in the selfish interests of that nation."

Viscount Grey goes on to say that England has always used her naval power as a trust and that it has exercised this trust in the interest of freedom. With this statement some historians will agree and others will disagree, according to their viewpoints. But all will welcome the fact that the prominent part which oil is coming to play as a motive power and the control which this country has—at least as yet—over the world's oil resources will by force of circumstances lead to a fairer distribution of indirect control over international shipping and will thus put the freedom of the seas on a broader if not a safer basis.

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CHAPTER II

OCEAN ROUTES

The Nature of ocean routes.—There was a time when the ocean was “the trackless deep,” a “waste of water,” but seldom visited even by the daring seafarer who bartered his tiny cargo for the riches of far-away lands. But where once the pioneer slowly felt his way, to-day whole fleets are scurrying to and fro, moving more cargo in a day than all the ships of former times could carry in a year. The “trackless deep” has been covered with a network of shipping routes—highways and by-ways, trunk lines and branches, tributaries and distributaries. To be sure, these routes are mere abstractions, only imaginary lines connecting the oversea markets of the world. But so steady has become the stream of ocean carriers, so constant the flow of commodities along certain lanes that, except for the lacking track of steel and the absent road-bed of stone, we have come to view the ways of the sea in much the same way as the roads on land,—equally as fixed and permanent. They are marked on the map as definite lines, as concretely drawn as the spur of the railroad or the turnpike and highway.

The North-Atlantic lanes.—But such a comparison may easily lead us to an exaggerated impression of the fixity and permanency of shipping routes. Perhaps the North Atlantic route, connecting the two most important traffic producing centers of the world, northwestern Europe and northeastern America, is the only one whose nature approaches that of the railroad. Conditions here are altogether exceptional. Here the liner with her fixed route and regulated sailing

schedule, carries a larger share of the traffic than is the case in other parts. "It is the busiest of the seven seas: it is where new developments and revolutionary inventions invariably receive their ocean-going commercial baptism: where luxury and elegance have been carried to a supreme degree; where the ingenuity and skill of the engineer are revealed most strikingly; and finally, it is the arena in which the struggle for supremacy between the various maritime nations is contested most keenly and enterprisingly."¹

The result is first of all, that a large number of the ships used in this service are of such size and value that physical as well as economic considerations render their removal from this route as difficult as the removal of a railroad track. Secondly, the density of the traffic on this route has led to such a careful and exact demarkation of the paths which the giant greyhounds may follow as is found nowhere else on the ocean. The slower traffic of the sea is everywhere as free as is the street traffic of a small town. But the North Atlantic resembles the crowded streets of a metropolis, and the interest of all concerned has led to as stringent regulations as those which control the traffic of our large cities. "Keep to the right" is the rule, and means in this case keep 50 miles to port side. The honor belongs to a brilliant officer of the United States Navy, M. F. Maury, of having worked out an acceptable system of tracks for the North Atlantic express service. He first proposed the matter in 1855, but it was not until 1891 that the first group of steamship owners agreed to follow Maury's routes, and not until 1898 that their general adoption was assured by a written agreement, signed by all the large transatlantic steamship companies. The Titanic disaster caused a radical re-

¹ F. A. Talbot, "*Steamship Conquest of the World*," Preface.

vision of the summer route. The lanes to be followed differ to a marked degree from the Great Circle (the shortest route). But the greater safety from ice, drifting derelicts, etc., cannot be bought too dearly by any loss of time.

Flexibility of ocean routes.—The North Atlantic route is, however, an exception to the rule, for ocean routes are seldom fixed or even clearly defined. As we shall see, the bulk of the world's sea-borne commerce is moved by tramps, and they are free to go wherever the prospect of profitable cargo calls. Their movements are heavier along certain ocean lanes than along others, but these movements shift from season to season and from year to year. Even line traffic does not form a rigid system of routes; new branches are added, new lines are opened, old ones discontinued, etc., as the kaleidoscopic changes of world market conditions demand.

Definition of an ocean route.—It is therefore difficult even to define an ocean route. Is regular line service that once in a great while calls at a lonesome island in the South Sea, a trade route? Shall we call a trade route a movement of tramps that reaches an enormous volume at the height of the season and dies down to nothing for the rest of the year? We agree with Professor A. J. Sargent, of the University of London, whose answer is this: "If a considerable number of ships, during an appreciable period of time, follow the same track, for similar purposes, we are justified in marking the track as a trade route."¹ But even that at best is vague.

What, then, determines the position and direction of ocean routes? Shipping is but the handmaiden of commerce.

¹ *Seaways of the Empire. Notes on the Geography of Transport*, p. 23.

Without available cargo, ships swing idle at anchor, destroying value, not creating it. Trade, therefore, determines the direction and volume of ocean routes and with it also their character and profitableness. Sea-borne trade in turn, depends upon traffic-producing factors in oversea markets. Hence, the elements ultimately determining the course of shipping are the geographical conditions in one part of the earth in relation to the conditions in other parts. Of course, it is also true that "facilities beget trade." Or, as ex-President Wilson expressed the same thought: "It may seem a reversal of the natural order of things, but it is true that the routes of trade must be actually opened—by many ships and regular sailings and moderate charges—before streams of merchandise will flow freely and profitably through them."¹ In a way, therefore, shipping and trade are mutually dependent.

A word should be said about the elements of the geography of commerce. The most striking feature is the concentration of the world's energetic population in the north temperate zone. The corresponding belt of the southern hemisphere is gaining, but the tropics and sub-tropics, equal in area to about 24,000,000 square miles, and with a population of 800 million people as against 900 million in the two temperate zones, supply but 1/6 (in value) of the merchandise now entering international trade; i. e., 3 billion dollars out of a total of 18½ billions.²

Latitudinal character of present world trade.—At present, therefore, an overwhelming proportion of the world's trade moves from one area of the north temperate zone to another. We may say it follows the latitudes. The reason

¹ *Address before Congress*, Dec. 8, 1914.

² *The Americas*, June, 1918, p. 26.

for this is simple. As yet, trade is largely the result of different stages in the economic development and not so much prompted by natural differences. The signs of the times tell us that America is rapidly reaching Europe's stage of industrialization, which will reduce the relative significance of this now all important latitudinal trade.

But already the southern temperate zone has strongly come to the fore. Enormous volumes of commodities move up the longitude—though seldom in a straight northerly or southerly course. But countries like South Africa, Australia and Argentina also have an industrial future. They, too, will some day turn their own raw materials into manufactured products.

The future importance of the tropics.—This leaves the trade with the tropics as the trade of the future, which nature creates because it is the trade between geographical zones of different climatic conditions, inherently interdependent. The trade of the future will follow the longitudes rather than the latitudes. This development does not belong to so distant a future as some may think. During the period from 1900 to 1919 the value of tropical imports into the United States increased from only \$350,000,000 to over two billion dollars. The rapid growth of the population of the temperate zone will necessarily bring to light the dormant treasures of the tropics and sub-tropics, and technical progress will accelerate the process. The aeroplane will carry the explorer over pathless swamps and forests, the tractor will help to draw out of the virgin soil what is denied the beast of burden, and the motor truck will furnish the necessary transport facilities until the railroad supplements or supplants it.

These revolutionary changes will affect the shipping

routes profoundly. While the North Atlantic route will hardly lose in absolute importance, yet its relative significance will be impaired by the development which the trade with the tropics is about to experience.

The load-index.—The conditions which have been discussed so far, account for the location of the termini of ocean routes, the points of origin and of destination. The ideal trade route would consist of two commodity streams of equal volume flowing in opposite directions. Such a route does not exist, but the more closely conditions approach this ideal the greater is its profitableness. This balance between the two opposite streams of commodities of a given route largely determines the "load-index" of the vessels employed on it. The "load-index" shows the average degree to which the available carrying capacity of the tonnage employed is profitably utilized. To be sure, other considerations come into play, such as the necessity for regular and frequent sailings regardless of cargo available, and the nature of the commodity carried. But the ratio of outward to return freight is the biggest single factor affecting the "load-index" and thereby the profitableness—in absence of artificial rate control—of a shipping route.

Shipping Board statistics of ocean routes.—Until recently, no reliable data have been available for the respective tonnage requirements of given trade routes. The Division of Planning and Statistics of the United States Shipping Board has rendered a valuable service by compiling and publishing a series of studies of "The Trade of the United States with the Principal Regions of the World in 1914 and 1918, showing Imports and Exports in Long Tons and Deadweight Tons of Shipping Required."

We will let the authors of this valuable publication speak for themselves:

"With this Bulletin the Shipping Board inaugurates a service which it is hoped will meet one of the greatest needs of the shipping industry. The purposes of this service are to assist ship operators in gauging the tonnage requirements of the trade regions in which they are interested; to indicate avenues for the profitable employment of the American Merchant Marine; to assist in securing an equitable distribution of American tonnage; and to place at the disposal of the shipping industry facts which are ordinarily gathered either through years of experience or at an expense prohibitive to individual companies. The scope of this publication is threefold:

- (1) To translate the foreign trade of the United States into terms of ships and cargoes—that is, to reduce the total trade with the various regions to the common denominator of long tons and then to compute the amount of deadweight tonnage required in continuous service to move this volume of ocean-borne traffic.
- (2) To show the seasonal fluctuations in the movement of commodities; and
- (3) To indicate the probable movement of commodities to and from the various trade regions during current calendar year.

"As this service is for the shipping industry, the statistics of imports and exports are given in weight (long tons and deadweight tons) and not in values. The values of imported and exported commodities may be ascertained by consulting publications of the Department of Commerce

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through whose courtesy and cooperation the basic figures for reducing the foreign trade of the United States to terms of long tons and deadweight tons have been obtained."

The results of these studies which form the contents of a series of Bulletins, may be summed up in the following table:

TRADE VOLUME AND TONNAGE REQUIREMENT ON AMERICAN TRADE ROUTES

REGION OF SHIPMENT OR DESTINATION	Import Movement to the United States 1918 (Fiscal Year)		Export Movement from the United States	
	Long Tons	Deadweight Tons	Long Tons	Deadweight Tons
	Totals.....	29,676,223	5,212,457	62,790,329
North American:				
Canadian, Atlantic and Pacific Regions.....	9,098,218	.....	28,883,806	87,660
Alaskan Region.....	187,556	12,629	345,215	26,848
Hawaiian Region.....	613,454	88,056	538,455	89,221
Middle American:				
West Indian Region.....	4,001,746	408,194	3,455,153	398,258
Porto Rico.....	434,027	44,783	424,797	46,594
Eastern and Western Caribbean Region.....	1,360,070	318,323	1,427,907	184,391
Mexican Region:				
Overseas.....	5,063,357	448,520	713,437	93,583
Overland.....	651,009	.....	421,865	.....
South American:				
Amazon and East Brazilian Regions.....	897,795	359,899	999,165	401,331
River Plate Region.....	658,731	415,260	1,018,410	575,050
Central and North Chilean.....	1,810,613	549,833	790,185	317,699
Peruvian Region.....	185,377	55,485	233,242	75,464
North European and Mediterranean; Europe and Mediterranean Africa.....	1,939,076	827,325	20,458,358	6,810,710
Greenland Region.....	5,151	1,949	15,144	6,475
West and South Africa:				
West and South African Regions.....	139,462	77,301	217,104	123,370
Indian Ocean:				
British Indian Region.....	463,011	383,308	255,600	191,050
East Indian Region.....	435,637	317,630	179,332	132,978
East African and Arabian Region.....	34,125	22,019	40,925	34,059
East Asian:				
East Asian Region.....	958,524	492,999	1,764,567	740,866
Philippine Region.....	427,445	224,340	151,210	76,963
Australian.....	311,839	164,804	456,452	230,348

Trade routes of the British Empire.—Professor A. J. Sargent has made a similar study of the trade between ports of the United Kingdom and oversea markets. The following is a compilation of his findings¹ which in view of the enormous importance of British trade and shipping represent a valuable contribution to the study of world shipping.

APPROXIMATE AVERAGE LOAD-INDEX OF IMPORTANT BRITISH SHIPPING ROUTES:

		Out	Home
United Kingdom—South Africa	30*	20*	
" " —Australia	50*	60*	
" " —New Zealand	45*	75	
" " —Indian Ocean	70	100	
" " —Far East	75	55*	
" " —United States	25*	60*	
" " —Canada	25*	65*	
" " —River Plate	90**	100	
" " —Brazil	100**	35	

* Considerable passenger travel affects load-index.

** Almost exclusively coal.

Professor Sargent's calculations are based upon 1912 figures. In what manner and to what extent the war has affected these relationships appears clearly from the chart on page 29.

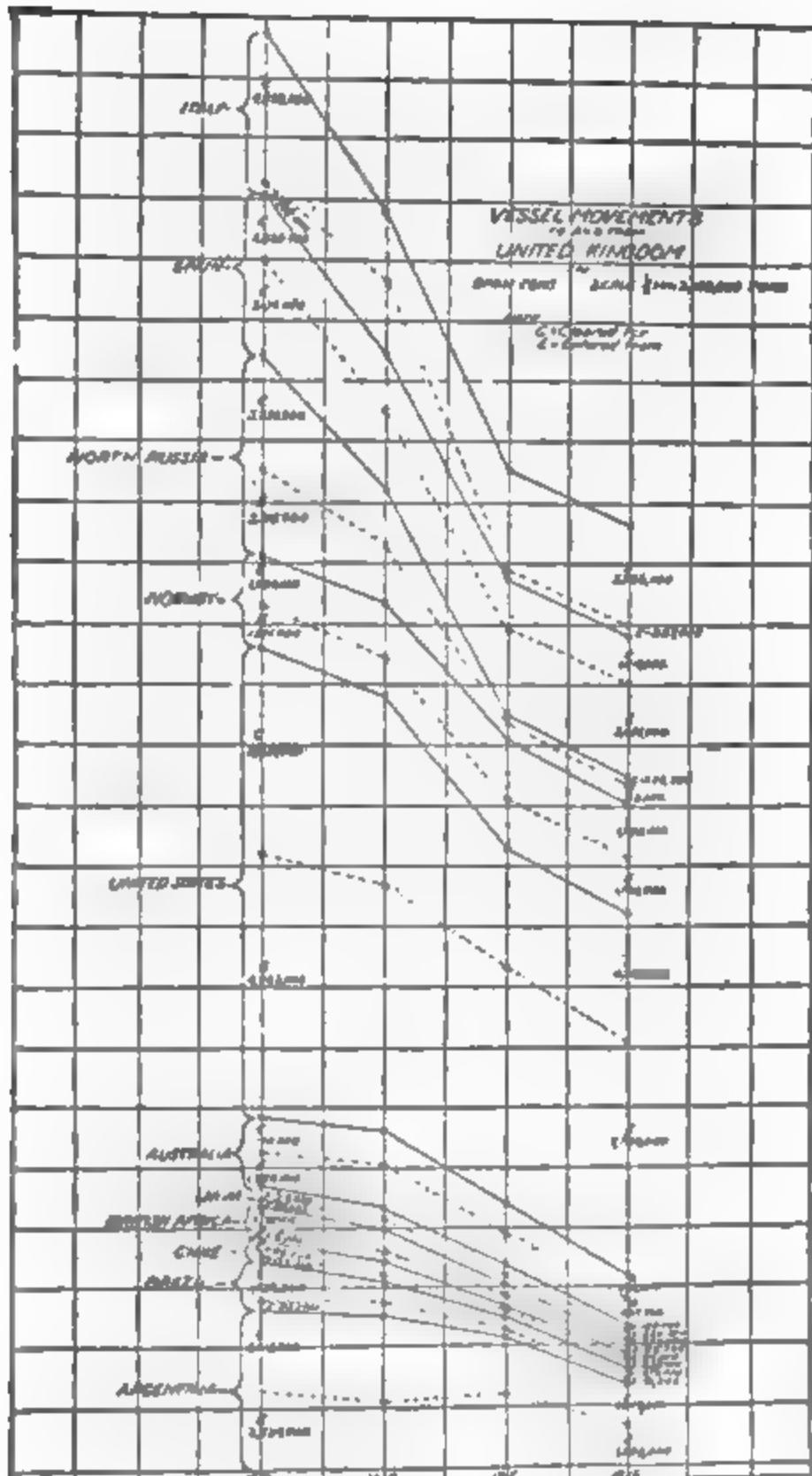
On the whole, we might say these dislocations have been rather quantitative than qualitative. The amounts have changed, but the intrinsic features of the trade have

¹ *Seaways of the Empire. Notes on the Geography of Transport.*

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TRADE DISLOCATIONS DUE TO WAR



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from *Influence of the Great War upon Shipping*, by J. Russell Smith,
New York, Oxford University Press, American Branch, 1919.

undergone little change. The one important exception to this rule is the virtual termination of British coal exports to South America. That matter will be discussed in a later chapter.

Triangular voyages.—Of all the valuable information conveyed by the Shipping Board's figures and by Professor Sargent's tabulation, that which here interests us most is the frequent discrepancy between outward freight and return cargo and the resulting effect upon ship movements throughout the world. If a ship carries coal from Cardiff to Brazil, where no return cargo is found, she does not return in ballast to get more coal, but every effort is made to reduce the ballast voyage to a minimum by calling at the nearest port that does offer freight. To use a technical term, the ship makes a triangular voyage. It is easy to read from our tables the directions in which such roundabout voyages are apt to be made. Take, for instance "Europe and Mediterranean Africa" on the Shipping Board table. We note that almost 7,000,000 D. W. ton had to be allocated to this route in 1918 for exports from the United States, while less than one million suffice to carry the trade moving in the opposite direction. On the other hand, Hawaii offers a good example of a well-balanced trade movement.

Even steamship lines operating over regular routes sometimes have to resort to triangular voyages. "As a instance of the lengths to which it is sometimes necessary to go in order to operate at a profit, a steel corporation, in order to put its service to Vancouver on paying basis, was obliged to sail its vessels from Vancouver to France before returning to New York. Fou

complete changes of cargo were required, the itinerary being:

From New York to Vancouver with steel;

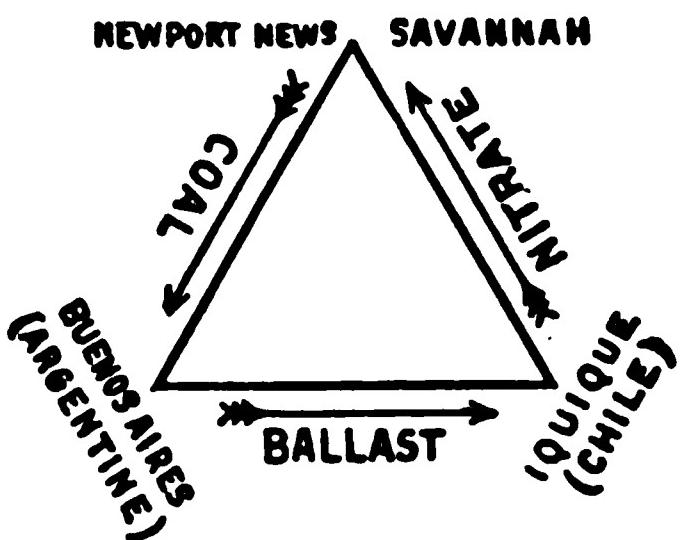
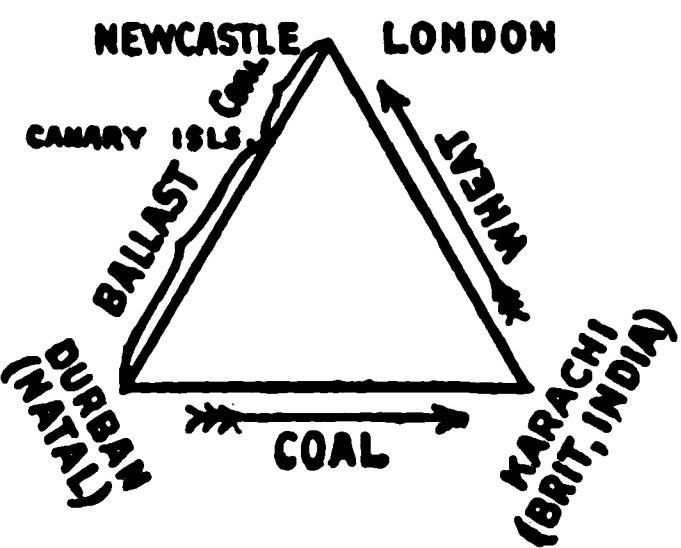
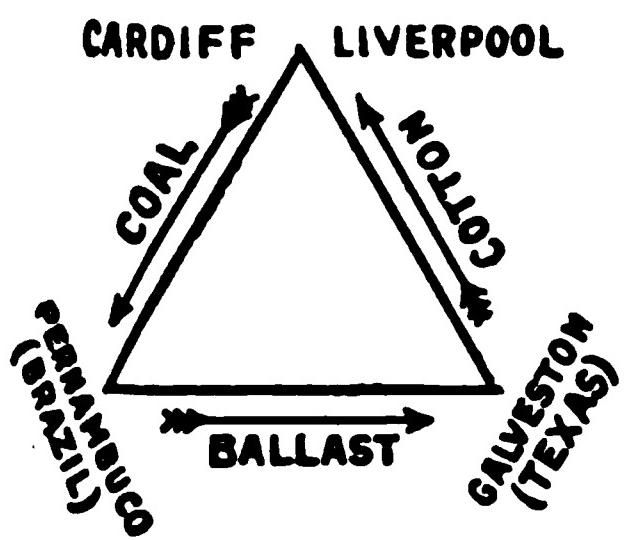
Vancouver to the Gulf of California with coal or lumber;

Gulf of California to Dunkirk, France with copper matte;

Dunkirk to New York with French chalk."¹

Examples of typical triangular tramp voyages are the following:

TYPICAL TRIANGULAR TRAMP VOYAGES



¹ Shipping's Share in Foreign Trade, Guaranty Trust Company of New York; pp. 18-19.

The middle link does not necessarily represent a ballast voyage; it may be possible to pick a little "wa freight" to reduce the expense.

In reality the shipping situation does not appear as schematic as the foregoing tables might lead one to believe. The peculiarities of the passenger business, the employment of special types of vessels such as tankers, molasses ships, refrigerator ships,—the different uses to which tramps and liners are put—all of these special factors reduce the value of general averages and necessitate modifications of the general conclusions which one may draw from the relation of outward cargo to return freight. But these disturbing factors will be taken up in their proper place.

Fuel cost and other expense items affect profitableness of route.—So far we have investigated cargo movement as the determining factor in the routing of shipping. The cargo is the source of income of the shipowner, and as such deserves first and foremost attention. But profitableness depends on net income, that is, gross earning minus operating expenses. Therefore, anything that affects expense items affects the profitableness, and in consequence, the desirability, of a route. With most vessels fuel cost is the biggest single item of operating expense. The price at which fuel, that is, coal or oil, may be had along a trade route is therefore a vital consideration. This question is crucial for a vessel with a very limited steaming radius. Suppose a steamer engaged on a 6,000 mile voyage finds one single coaling station midway. It means she has to bunker for 3,000 miles at a time. If an alternative route is open, offering coal every 1,500 miles, but half the bunker space will be required, with

corresponding increase in the space available for cargo. Unless the loss in time counts too much the second route would be preferred.

A low fuel price, coupled with frequent fuelling opportunities, renders an ocean route attractive. Much of the competition between the Panama and Suez Canals will be a matter of dollars and cents payable by the ship-owner for coal or oil on either route.

Undoubtedly the improvement of the marine engine, resulting in a fuller utilization of every ounce of coal burned under the boiler, thus lengthening the steaming radius obtained from a given quantity of fuel, and to an even greater extent, the wholesale transition from coal to oil, have greatly reduced the value of frequent fuelling opportunities. As a result of the greater efficiency of the modern marine engine it is no longer necessary to make as frequent circuits to out-of-the-way coaling stations as formerly. The greater the steaming radius, the more closely can the steamer follow the shortest route to her destination, owing to the spherical shape of the earth, the arc of the Great Circle passing through the two points in question.

Great Circle routes.—We are so used to the axiom that a straight line is the shortest distance between two points and so prone to forget the limitations of the ordinary map of the world on Mercator's projection that it is hard, at first, to fully realize the meaning of the statement that, on a globe, the arc of a circle is the shortest connection between two points. But a glance at the globe quickly dispels all doubts. Then we readily understand why the shortest route from New York to the English Channel, for instance, skirts the Grand Bank, or

why the San Francisco-Yokohama line, via the Great Circle, curves northward to the Aleutian Islands, thereby saving almost a day's steaming. The vessel with the greatest steaming radius can take the fullest advantage of the Great Circle route.

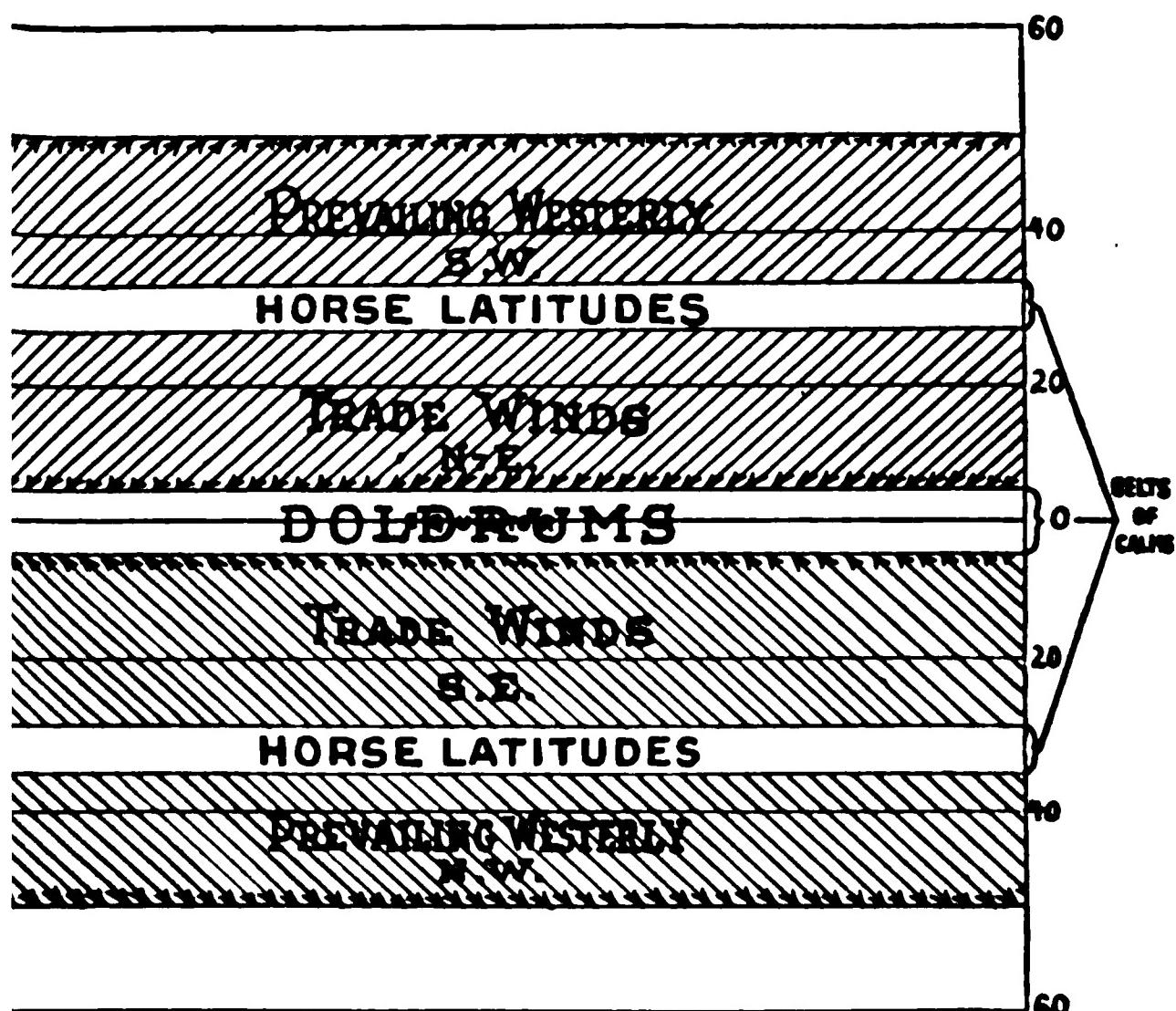
But the shortest route is not necessarily the most desirable one. As we have seen, the fuel question necessitates frequent deviations. The chance to pick up way-cargoes invites them. In the case of passenger ships, regard for safety leads to important modifications, and as the Atlantic situation illustrates, greater safety is reflected in lower insurance rates. The proximity of other vessels works the same way. Climatic conditions influence the routing, especially of passenger vessels. The respective climates of the Red Sea and the waters adjacent to the Panama Canal will be another important factor in deciding the outcome of the competition between the two great waterways.

Political aspects of ocean routes.—Where political expediency demands the establishment of regular services, such as the various subsidized mail and express lines connecting oversea possessions with the mother land, the various economic considerations, while not arbitrarily ignored, are often subordinated. The "all-red" ocean routes of the British Empire are the most prominent examples of this kind.

Planetary winds and sailing routes.—So far we have confined our attention to the steamer. But the sailing vessel has not yet altogether disappeared. Its importance is still sufficient to justify a few words on the geography of the winds. In the following diagram an actually complicated situation is reduced to its simplest

ents. We note four distinct zones of regular air currents of which the sailing ship tries to take the fullest advantage, seeking the favorable and shunning the adverse. As the heat equator shifts with the change of seasons the entire system of air currents likewise moves north or south.

SCHEMATIC PRESENTATION SHOWING PLANETARY WINDS



There is one important exception which deserves mention; that is, the northern portion of the Indian Ocean. There the large land mass of Asia in summer becomes much hotter than the ocean to the south of it that year. In that season there is a strong southwestern air

current, the monsoon, blowing from the Equator to the arid land mass lying to the north, a reversal of the otherwise prevailing trade wind. In winter the situation here is normal.

These wind conditions explain the fact that for the sailing vessel the distance in nautical miles¹ is relatively unimportant. Her captain figures the voyage in days, not miles, for the route long in miles is often shorter in days. Thus the trip across the Atlantic from Europe to the United States is either a wide circuit to the south of the latitude of the Westerly or to the north, according to the season. This roundabout route is not necessary when going in the opposite direction, for, as Franklin correctly stated, "it is down hill to England." The Westerlies also explain the fact that ordinarily sailing vessels "round the Cape" to Australia but "double the Horn" on their way back.

Winds affect steamer routes.—Even steamers are affected by the winds, especially by the North East Trades of the North Atlantic and the brave west winds of the "Roaring Forties." While the modern steamer can fight her way against these winds, either a reduction of speed or a larger coal bill reflects the increased effort. This is best illustrated in the South Pacific trade. Most freighters go to New Zealand around the Cape but return by the Horn. Likewise those which for some reason have to return by the Cape do not head for Cape-town but for Durban, because a more northerly, though longer, course traverses a zone of better weather and avoids the Westerly where it blows the strongest. It is probable that cheap bunker coal at Durban also has a

¹ Nautical mile = 6,080 ft.

bearing on this question. Thus even a modern marine engine, the latest product of engineering science, is not fully emancipated from the hindrances imposed by the forces of nature which so absolutely control the movements of sailing vessels.

Proper routing of world tonnage means great saving.— The European War, with its consequent shortage of tonnage, has done much to impress upon the business world the value of proper routing. Much has been learned, and more will be, as a result of that costly lesson. It is now fully realized that a shortage can be remedied just as effectively by a fuller and more economical utilization of the existing supply as by increasing that supply. "Criss-cross Trade" is just as wasteful on the ocean as on land. Striking examples are quoted by Professor J. Russell Smith, in "*Influence of the Great War Upon Shipping*":¹

"In ten months in 1917 the United States imported 274,000,000 pounds of rice, and exported 201,000,000 pounds. Some of it went to Greece, yet the main source of supply of rice for the world's export is Burma, beyond Suez. Despite the fact that Europe wails for food, we imported in that ten months 96,500,000 pounds of macaroni from Europe. We exported 12,000,000 pounds of peanuts, and imported 48,000,000 pounds, enough to have kept a 5,000-ton steamer busy for a year. It sounds unbelievable, but the tonnage busy carrying corn from Argentina to the United States in 1917 (the greatest corn producer in the world) would carry 2,000,000 bushels of wheat a year to the army in France. The list might be extended, but the point is certainly proved."

¹ pp. 111-112.

The farther a market is away from the purchasing port the more ships it needs for adequate service. If, therefore, a nearer market can supply the same commodity, ships are saved by substituting the nearer for the distant one. Therefore, the elimination of an entrepôt trading centre,¹ unless it happens to be situated on the direct route from producing to consuming market, which is bound to be the exception rather than the rule, means an increase in tonnage available. Such shipping economies were actually introduced under the irresistible pressure of war emergency. They will not all be permanent in their entirety; indeed, some are unreasonable except as war measures. But the direct routing to this country of large quantities of goods, such as rubber, Sumatra tobacco, tin, etc., formerly routed via Europe, especially through London, is likely to continue.

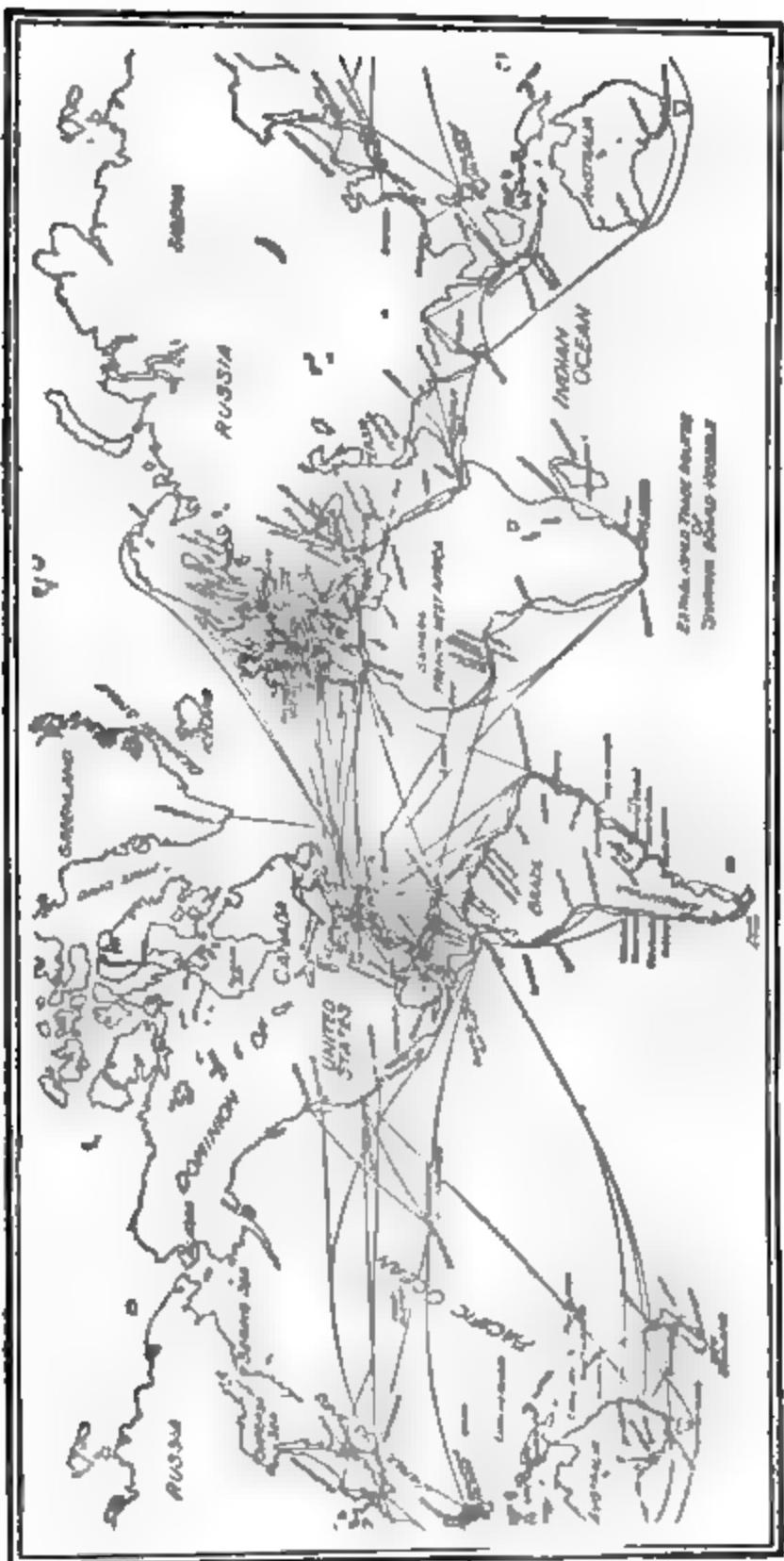
The war has changed world trade routes.—Moreover, changes in territorial sovereignty will revolutionize routing in those parts of the earth so affected. Much of Germany's entrepôt trade with the Baltic will remain a lasting heritage of the Scandinavian ports into whose lap it was thrown by the hand of Mars. The greater dependence of Europe on the supplies of this hemisphere—foodstuffs, raw materials and fuel—which is apt to continue for some time to come, adds to the significance of the trade routes leading to and from the Americas. This is further accentuated by the rise of production cost in Europe, which renders profitable, at least for the time being, a considerable trade in coal from this country to Europe, in competition with English coal, as well as many other movements of goods which formerly were

¹ For definition see Chapter V.

NETWORK OF STEAMSHIP TRADE ROUTES NOW COVERED BY
SHIPPING BOARD VESSELS

OCEAN ROUTES

39



Courtesy Marine Review

considered contrary to the elementary law of trade. To what extent the foreign exchange situation will overcome these abnormal conditions remains to be seen.

Shipping Board routes.—The war also completely revised the division of ownership of the world's merchant marine among the sea-faring nations. This also will affect routing. Thus American ships are plying to-day on routes where before the war the Stars and Stripes were never seen. We reproduce here a chart which shows the network of steamship trade routes covered by Shipping Board vessels:

But if the free play of competition is allowed to replace governmental control, the ships of the future, as of the past, will seek the best paying employment regardless of the flag they fly, subsidized vessels excepted.

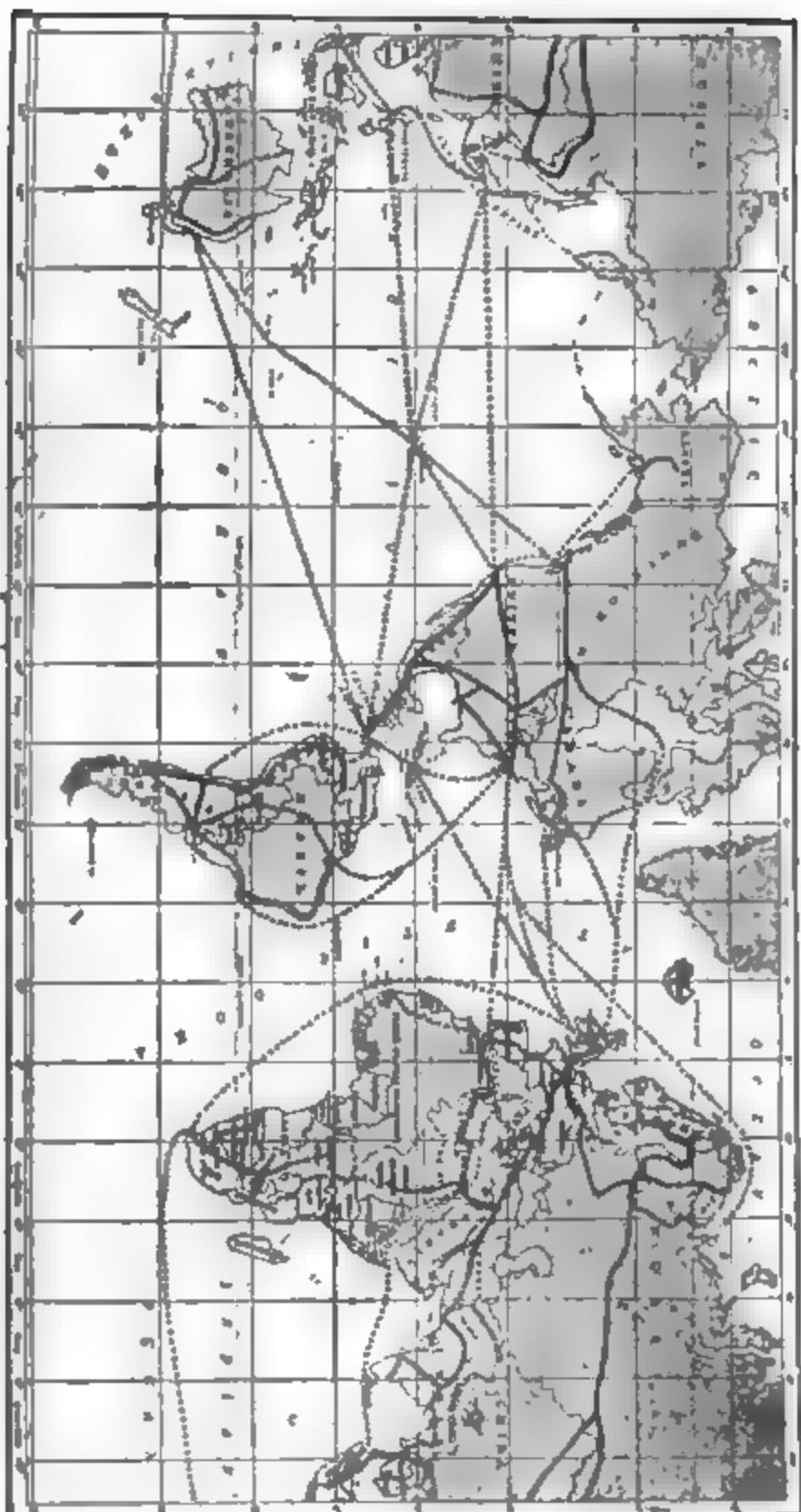
New lanes of world commerce.—Finally, the war has brought into the realm of probability the realization of long-hoped-for plans, such as a tunnel under the English Channel, under Gibraltar, and under the Bosphorus. Moreover, it has given new significance to such arteries of land transportation as the Cape-Cairo Railroad, or that running from Constantinople to the very gate of India. The map¹ on page 41 shows the world's most important transportation lines:

A project which is being widely discussed at present and which, if completed, is bound vitally to affect the routing of world shipping, is the plan of deepening the St. Lawrence river to permit its use by vessels drawing 25 feet or more. The project is being energetically pushed by an organization known as the "Great Lakes-

¹ From "The Americas" (National City Bank of New York). Vol. 5, No. 7, April, 1919, p. 22.

OCEAN ROUTES

41



Reproduced by courtesy of The Amencs,
THE WORLD'S MAIN RAIL AND SHIP LINES, EXISTING AND PROJECTED
(Lines in the Present Solid Inter-continental Railway Routes are indicated by Broken Lines)

OCEAN SHIPPING

ence Tidewater Association" with headquart
go and executive offices in Duluth.

Canadian government has spent money freely
upon the St. Lawrence route and is commit
expenditures in the future. It is now engag
nstructing the Welland Canal, to give it a de
feet, which will cost \$75,000,000 to \$100,000,0
work is about one-third done, and it will be
service unless the St. Lawrence is made nava
similar depth. From the foot of Lake Ontario
water at or near Montreal is 181 miles by the riv
which 113 is international boundary. It is said th
nditures required to make the river navigable wo
nfined to 46 miles of the 181, or a distance of ab
length of the Panama Canal. Argument for
ability of the improvement centers largely upon
that the improvement of a comparatively sh
of river will connect large bodies of navi
." 1

is estimated that improvements which would
ever navigable would at the same time produ
mately 4,000,000 horse-power between Lak
and Montreal, the income from which wo
est on the entire expenditure. Estimates on
d improvements are from \$250,000,000 t
00.

effective competition between land and water
ollow these accomplishments. In business
wins is he who looks ahead a little far
s. It is the same among nations.

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Relative Desirability of Ships Operating in four Trade Routes. (1919).

CHAPTER III

SUEZ AND PANAMA .

Isthmian canals as milestones of progress.—Man's conquest of space, generally speaking, is a hard struggle; progress is slow, and nature's obstacles are only gradually overcome. But there have been great moments in the history of transportation, moments when the rate of progress has been phenomenally accelerated; such as came when the waters of the Red Sea met and mingled with the blue depths of the Mediterranean in the Suez Canal; and again when the Isthmus of Panama was pierced. Nature had challenged man's ingenuity and perseverance by blocking the entrance into the Indian Ocean from the northwest and into the Pacific from the east, by two amazingly narrow strips of land, thus forcing the baffled mariner around dangerous capes thousands of miles out of his way. Man took up the challenge and won. He battered down both doors leading into those vast and almost deserted waters, and now we are free to speculate which is the back and which the front door—Panama or Suez.

An inter-oceanic canal, as such, is only an opportunity; the intended advantages remain potential until trade and shipping experiences translate them into actual facts. Therefore the changes wrought by new routes do not become apparent in a day. For business is conservative; its inertia is surprising. It often clings to established customs and arrangements long after the superiority of new methods has been established.

Early history of Suez Canal.—A striking example is the

ez Canal. When this work of the great French engineer and promoter, Ferdinand de Lesseps, was opened in 1869, steam navigation was still in its infancy and the sailing type of ocean vessel was wind-propelled. But because of weather conditions, particularly those found in the Red Sea, the Suez Canal Route was practically suited to sailing craft. No wonder, therefore, that the opposition to the new route was strong among shipowners in that the full benefit of the great short-cut was not until, encouraged by it, steamships began to replace their older rivals, sailing vessels. Likewise English merchants, especially those of London, did not view with complete equanimity the realignment which of necessity followed in the wake of this new trade route. They did

like to see Marseilles, Genoa, Venice, Trieste and other Mediterranean cities partly regain their place of and import directly from India and the Far East a goodly share of the rice, cotton, etc., that crowded London's warehouses and formed her entrepôt trade.

Important happenings in the Canal's history.—There is no change that does not harm some one and to attempt resistance is but natural. But when the first period of adjustment has passed, any proposition of real merit has an assured future in spite of inevitable hindrances. As in the early history of the Suez Canal, many difficulties had to be solved. There was the delicate question of what constituted the proper basis of toll charges: gross ton, net ton, displacement ton, deadweight ton, or tonnage cargo carried. After much blundering, and not until an international conference at Constantinople in 1873 had threshed out the matter, a net ton of the Suez Canal Company's own calculation was decided upon.

Then there were delays, due partly to purely technical causes, partly to the rapid growth of the traffic. A single ship with a clear course would effect the eighty-mile transit in from twelve to fifteen hours. That was the rule in the early days shortly after the opening of the Canal, but by 1883 the time lost in passing had increased the average journey to 50 hours, while cases of three days were not unknown. But all those difficulties could be, and were, overcome most successfully. Since about 1882, when the company was stirred by a protest from the business world, it has followed a liberal policy of steady improvements and gradual reduction of rates. The latter dropped from 13 fr. in 1876, per net ton registered, to 6.25 fr. in 1913;¹ while, encouraged thereby the traffic rose as follows:²

Year	Net tonnage Suez Canal	Number of vessels	Mean net tonnage
1870	0.4 million	486	898
1880	3.1 "	2,026	1,509
1890	6.9 "	3,389	2,033
1900	9.7 "	3,441	2,830
1910	16.6 "	4,533	3,658
1913	20.0 "	5,085	3,939
1914	19.4 "	4,802	4,042
1915	15.3 "	3,708	4,118
1916	12.3 "	3,110	3,963
1917	8.4 "	2,353	3,981
1918	9.3 "	2,522	3,669
1919	16.0 "	3,986	—
1920	17.6 "	4,009	—

¹ At the time of this writing rates are fixed at 8.50 fr. See January, 1920, edition of *Règlement de Navigation* of the Suez Canal Company.

² See *Le Canal de Suez*, Bulletin Décadaire de la Compagnie Universelle du Canal de Suez, 1921.

We note that both the number and the size of the vessels going through the Canal increased rapidly until the European War disorganized shipping. These cold figures calmly sum up the result of long tireless effort. Before this stage was reached canal builder and shipbuilder vied with each other in a close contest. No sooner had the Canal been deepened in 1908 from its initial depth of 26 ft. to 33 ft. than commerce clamored for larger ships with greater draft. By 1914, 36 ft. were available through the greater part of the Canal, allowing ships of 30 ft. draft to pass. Naturally, the other dimensions had to go hand-in-hand with the depth. Furthermore, the introduction of electric lighting, in 1887, permitting night navigation, materially increased the utility of the Canal.

Commercial significance of Suez Canal.—What has the Suez Canal accomplished? Has it satisfied the hopes which its promoters and builders had placed in it? There are many angles from which this question may be approached. But invariably the answer will be an emphatic "yes." There is the purely financial aspect, the aspect of the stockholders. Surely they are satisfied with the return on their investment of about 135 million dollars, which sum includes all improvements paid for up to 1915. There is furthermore the viewpoint of the statesman and the soldier to be considered. In the canal they see a vital link in the British Empire's most important line of communication and defense. We pass over the idealistic value which accrues from the fact that Orient and Occident were drawn closer together by thousands of miles. A few figures will illustrate this reduction of distances:

Distances from Liverpool and New York via Cape Town and via the Suez Canal to Selected Ports:

From	To			
	Bombay	Batavia	Hongkong	Sydney
Liverpool via:				
Cape Town	10,730	11,205	13,195 ¹	12,626
Suez Canal	6,189	8,516	9,785	12,235 ²
Distance Saved.	4,541	2,689	3,410	391
New York via:				
Cape Town ³	11,511	11,986	13,966	13,306
Suez Canal	8,102	10,429	11,673	13,512 ²
Distance Saved.	3,409	1,557	2,293	-206

¹ Via Singapore.

² Via Columbo and Melbourne.

³ Including call at St. Vincent.

We may single out the commercial advantages which the world enjoys, since merchant vessels no longer need to circumnavigate the Dark Continent on their way to the East. Leaving aside the temporary oversupply of tonnage which of necessity goes with any shortening of trade routes and which disappears as soon as commerce has grown enough to absorb the surplus, we find that better transportation facilities traveling over a shorter route have brought down the cost of Eastern produce. European prices of special Eastern products fell from 25 to 35 per cent within fifteen years after the opening of the Canal. This increased the demand for these goods and stimulated their production, thereby materially adding to the prosperity of the Asiatic countries. Indeed all parties concerned were benefited; there was hardly a country that did not share in this boom.

not all parts of the world were affected in the way or to the same degree. Up to the time when Panama Canal was opened, the entire continent of Asia, as far as it is tributary to the Pacific Ocean, was reached by the Suez Canal. This will continue to be the case for the bulk of the trade because the Panama Canal only taps the Far East. The big traffic-producers of Southern Asia with their exports of wheat, rice, tin, rubber, tobacco, etc., are India, Ceylon, and Malaya, and they clearly lie within the sphere reached by the Suez Canal.

Competition between Suez Canal and Cape route.— Australian situation is very different. Here the route continues as a big factor, successfully competing with the Canal. As we have seen from the chart preceding page, the saving in distance is less than 400 miles for a 12,000-mile voyage. That is insignificant, but even this small advantage is furthermore offset by the expense of the Canal dues, the delay in passing through the Canal, and sometimes by the higher fares on the Canal route when compared with those charged on a trip around the Cape. Three phases may be distinguished in the competition between these two routes.

In the days of the sailing vessel, the Cape route was the only feasible one; then as the steamer came to the fore, all steam traffic was diverted through the Canal, because South African coal was not yet marketed and the cost of sea-borne Wales coal was prohibitive at Cape Town or Durban. But this situation, as has just been pointed out, was reversed when Natal coal was offered at low prices in the South African market. Moreover, progress made in the construction of marine engines

was such that the stormy weather on the Cape route, which had originally proved so forbidding to the steamers, now lost its terror. The weather situation is especially important on the voyage from Australia to Europe, since the steamer there must contend with the prevailing Westerlies, a force against which a weak engine is no match. Finally, the size of the steamer, because of the ensuing economies, tends to exceed the maximum capacity of the Suez Canal. Mr. Lincoln Hutchinson in his book "Panama Canal and International Trade Competition" (p. 27) points out that for a typical cargo carrier operating under normal conditions total expenses via Suez will exceed those incurred on the voyage around the Cape by almost 30 percent. Thus, all these forces are simultaneously at work to direct the steam traffic between Australia and Europe or North America, away from the Suez Canal route to that around the Cape.

Early history of Panama Canal.—The financial success of the Suez Canal encouraged its founder, de Lesseps, to try his hand at a more ambitious undertaking, that of cutting a canal through the Isthmus of Panama. The idea of such a short cut from the Atlantic into the Pacific had for centuries been almost a world obsession. Its accomplishment meant, as a great geographer has expressed it, "to shorten the circumference of the earth by one-fourth." It eliminated the longest and most hazardous voyage known to navigators.

Thus when de Lesseps, in 1879, formed his Panama Company he only undertook to carry out a long cherished scheme of others. From time to time interest in the project had been aroused by the increasing trade growing up between the Atlantic and Pacific coasts of

Americas as well as by such events as the Mexican and Oregon country dispute and particularly by the "crisis" of 1848.

about 1840, the big powers who, because of their or other interests were most vitally concerned in the scheme, had begun to manoeuvre for points of control, fortifying them by numerous treaties. The object of these treaties, as far as this country was concerned, was primarily to secure the sole right to build a Panamanian canal, guaranteeing at the same time equal rights to all who would use it. Special mention may be made of the Clayton-Bulwer Treaty of 1850, revised in 1871, and of the Hay-Pauncefot Treaty of 1901. This is a mutual agreement between the United States and Great Britain, guaranteeing that neither party would attempt to build and operate a Nicaragua Canal independently of the other.

The Suez Canal project failed, not so much because of engineering difficulties, though a sea level canal was possibly too difficult an undertaking for the stage of engineering knowledge then reached, but largely because the significance of sanitation was not sufficiently realized, and even less because of the criminal waste with which two-thirds of the building funds were squandered in France through the press and the electors and elected alike. Building had been going on from 1883 to 1889, and was resumed for a short time five years later by a subsidized French company. It failed likewise, sharing the fate of an American syndicate which had struggled vainly from 1885 to 1893 to construct a canal across the Isthmus of Panama by the Nicaragua route.

United States completes Panama Canal.—The final

curtain rose on the last act of this great world drama when, in 1902, the United States decided upon the completion of the project. From this time on events followed each other in rapid succession: the purchase from the French company of its concessions and property for \$40,000,000, the revolution in North Colombia, resulting in the secession of the Republic of Panama, with 300,000 inhabitants, and finally the treaty of November 18, 1903, in which the new state ceded, or literally leased, the Panama Canal Zone to the United States for a period of one hundred years. Actual work could now begin. Where yellow and malarial fevers formerly had raged unchecked (22,000 people had died during the de Lesseps work), sanitary conditions were now established, spreading the fame of Colonel Gorgas throughout the world. After careful consideration, the plans for a lock canal were finally accepted in preference to the sea-level canal favored by European experts; and under General Goethals' ingenious leadership the world's greatest engineering feat was accomplished in a relatively short time. In 1914, the canal was opened to commerce.

Suez and Panama compared.—The physical features of the waterway have been described so often that we would only retrace the steps of others if we were to give a detailed account of them. It may suffice to give a few data comparing the Suez Canal with its new rival.

	Panama Canal	Suez Canal
Cost	\$400,000,000	\$100,000,000
Length	50 miles	100 miles
Min. depth	41 feet	36 feet
Min. bottom width	300 feet	100 feet
Dues	\$1.20	8.50 fr.
Time consumed in passing.....	10-15 hours	15-20 hours

as unfortunate in many ways that the opening of the Panama Canal should have almost coincided with the break of the European War. For sentimental reasons it is regrettable that one of man's proudest achievements was opened to traffic almost unheralded. We noted the event when, on the 15th of August, the first commercial vessel, the American steamer *Icona*, passed through the Canal.

Cripples Panama Canal traffic.—But the war did more than merely to dim the glory of an auspicious opening; it threw a dark shadow over the first years of its existence. It practically tied up the entire tonnage of the Central Powers; it caused an unprecedented concentration of shipping in the Atlantic, virtually eliminating the long-distance routes which otherwise would partly have used the canal. By causing an unparalleled tonnage to be diverted towards the railroads those goods which would have passed through the canal. Thus, not only by hindering the free development of international trade intercourse and by reducing the world's commerce, the war adversely affected the canal's opportunities. Therefore, it is not surprising that anticipations were not fulfilled. In spite of these facts, some small and therefore temporary, traffic accrued to the canal; for instance, much of the nitrate shipment for Chile which was purely war trade. The table on page 54 shows the growth of traffic.¹

Panama Canal tolls.—A word should be said about the amount of tolls which vessels using the canal are required to pay. After an exhaustive investigation by Professor E. R. Stettinius, the *Panama Canal Record*.

	Number of ships	Panama Canal Net tons	Cargo tons
1915	1,171	3,948,480	4,966,560
1916	1,278	3,929,014	4,931,911
1917	2,081	6,362,387	7,557,712
1918	2,233	6,484,604	7,334,510
1919	2,394	7,128,497	7,702,748
1920	2,814	10,378,000	11,236,000

Johnson, the toll was fixed by a presidential order at \$1.20 per net ton for ships carrying cargo or passengers, while a reduction of 40 per cent is granted to ships going through in ballast. War vessels pay 50 cents per ton of actual displacement. Since Congress, in June, 1914, repealed the law which exempted American coastwise ships from the payment of the toll, there have been no exceptions to this rule, if we overlook the insignificant fact that the government ships of Panama have the privilege of free passage.¹ The statutory maximum of tolls that can be charged is \$1.25 per net ton (national measurement rules of U. S. A.). Efforts are being made to have this law changed. On October 1st, 1919, the House of Representatives passed a bill (H. R. 7015)—it is now in the hands of the Senate for consideration—the purpose of which is to make the Panama Canal rules of measurement govern in determining the tolls to be paid. As it is, except for vessels transiting in ballast, the Panama Canal rules of measurement figure only in the statistical record. The reason is both simple and interesting. From the first, the rate of tolls established at \$1.20 per net

¹As this book is going to press, signs are multiplying that the whole question of toll exemption for American vessels engaged in coastwise traffic will be reopened. The outcome of the 1920 Presidential election may have a bearing upon the outcome of the struggle which would ensue.

vessel ton of actual earning capacity, as determined by Panama Canal rules was higher than a rate of \$1.25 per ton of net capacity as determined by United States national rule, simply because the ratio of net tonnage by national rule of any country to actual earning capacity is substantially less than the ratio of 120 to 125. The result has been that for loaded vessels using the canal, the legal maximum of \$1.25 per net ton national measurement rules acted as a peg preventing the application of the \$1.20 toll charge per net ton Panama Canal rule. The purpose of the bill which Mr. Esch introduced on July 12, 1919, is to remove this peg, incidentally permitting thereby a raise in the Canal toll receipts.¹

Economic significance of Panama Canal.—The chief value of the Panama, as of the Suez Canal, lies in the fact that it reduces the distance to and from important world markets.

**TABLE SHOWING REDUCTION IN NAUTICAL MILES
AFFECTED BY THE PANAMA CANAL²**

TO	New York	FROM		
		Savannah	New Orleans	Liverpool
San Francisco ¹	7,873	8,276	8,868	5,666
Honolulu ¹	6,610	7,004	7,605	4,403
Valparaiso ¹	3,747	4,141	4,742	1,540
Yokohama ³	3,768	4,649	5,705	—694 ⁴
Shanghai ³	1,876	2,757	3,813	—2,852 ³
Hongkong ³	—18 ³	863	1,919	—4,172 ³
Sydney ⁴	3,932	4,598	5,444	—150 ³
Wellington ¹	2,493	2,887	3,488	1,564 ³

1. Difference between Panama and Magellan routes.

2. Difference between Panama and Suez routes.

3. Distances less via Suez route.

4. Difference between Panama and Good Hope route.

¹ For additional details see House Document No. 126 66th Congress, 1st Session, Panama Canal Tolls, Letter from the Secretary of War.

² Johnson and Huebner, *Principles of Ocean Transportation*, p. 86.

These reductions in the length of voyages result in saving of time and money. They reduce the price of transportation and force down the price of commodities brought from distant markets, thereby increasing their salability and helping the producing as well as the consuming countries. To be sure, part of these gains, for the time being, are used to help defray the expenses of operation and maintenance of the waterway, not to mention the interest on and the amortization of the enormous capital invested.

The countries most directly benefited in this manner are those of the Western Hemisphere. The coastwise trade of the United States can now reach the Pacific through the Canal, whereas it formerly had to go around the Horn or else tranship at Gulf ports into various transcontinental or trans-isthmian railroads and out again. From 7,000 to 9,000 miles are now saved, according to the respective location of the ports served, as well as the expensive and wasteful transshipment, to say nothing of the reduced expenses due to cheap fuel at Panama as compared with the Straits of Magellan. These improvements are not without their beneficial effects upon shipping, commerce, and even upon transcontinental all-rail routes. To preserve a sound competition between the water traffic through the Canal and the transcontinental railroads, Congress forbids railroad-owned vessels the use of the Canal in coastwise traffic. The trade between the Atlantic coast of North America and the Pacific coast of South America and vice-versa is being similarly affected.

To a lesser degree the commercial relations between Europe and the west coast of North and South America

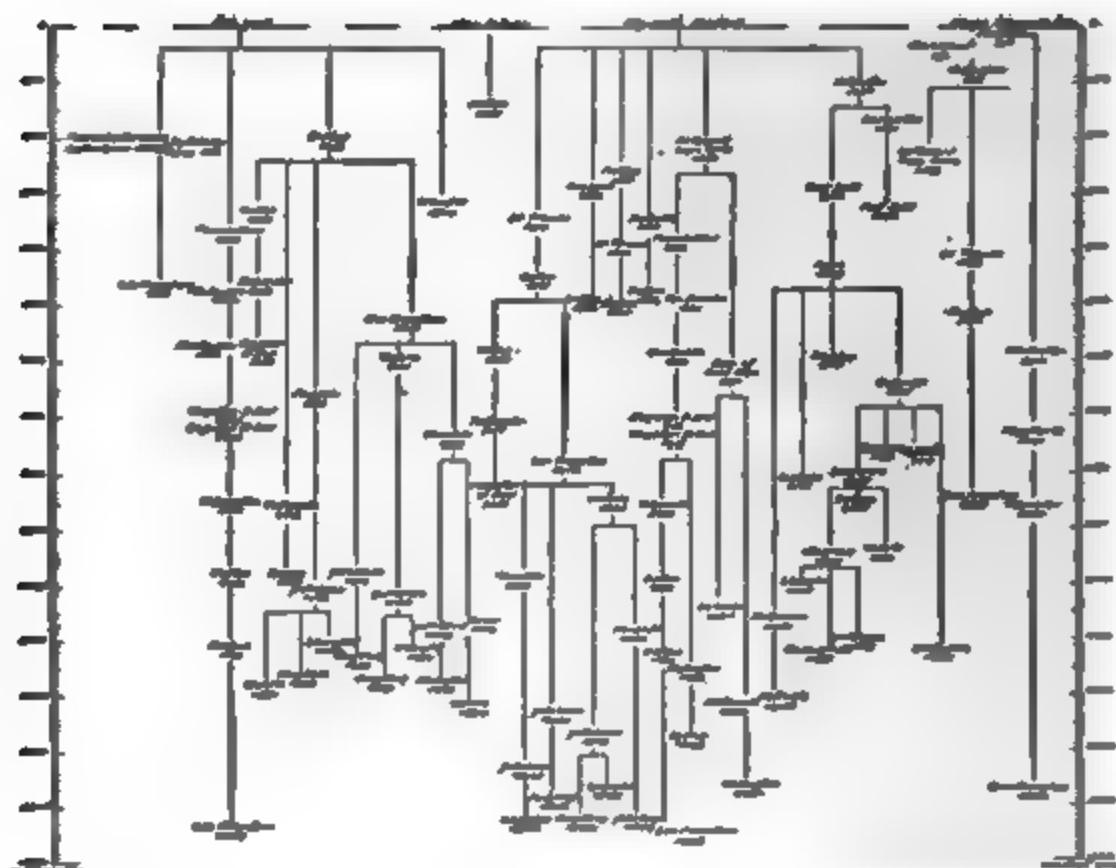
on the one hand, and between eastern Asia and Australia, on the other hand, come under the influence of the Panama Canal. It is true that the saving in time grows relatively less important the farther the point of origin or destination of shipment is removed from the shores of this continent. But the absolute figures in these instances are still such as to give the Canal route the preference in all but a few exceptional cases.

The "Twilight Zone," served by both Suez and Panama.—However, a different situation arises in the case of movements from eastern Asia and Australia to Europe and vice-versa, or of shipments from the Atlantic coast of North America to points in the Indian Ocean. Here the "twilight zone," that is, the competitive area served by both the Suez and Panama Canals, is reached.

To determine the boundary line, which divides the respective spheres tributary to the two great interoceanic canals, it would not do simply to go 180° east or west from New York or Liverpool and call the entire territory lying in one-half of the globe Suez territory and the other Panama territory. Steamship lines are not air lines and do not follow the latitudes. The lay of the land, coaling stations, etc., make the actual steamship lines appear much longer than they are. Therefore, only a careful study of actual distances covered by steamships to and from various points leads to the proper location of the lines of demarkation that form "the great divide" between the two traffic zones. Such a study may be made from the accompanying chart.¹

¹ From Hearings before House Committee on Merchant Marine and Fisheries on Interoceanic Canals.

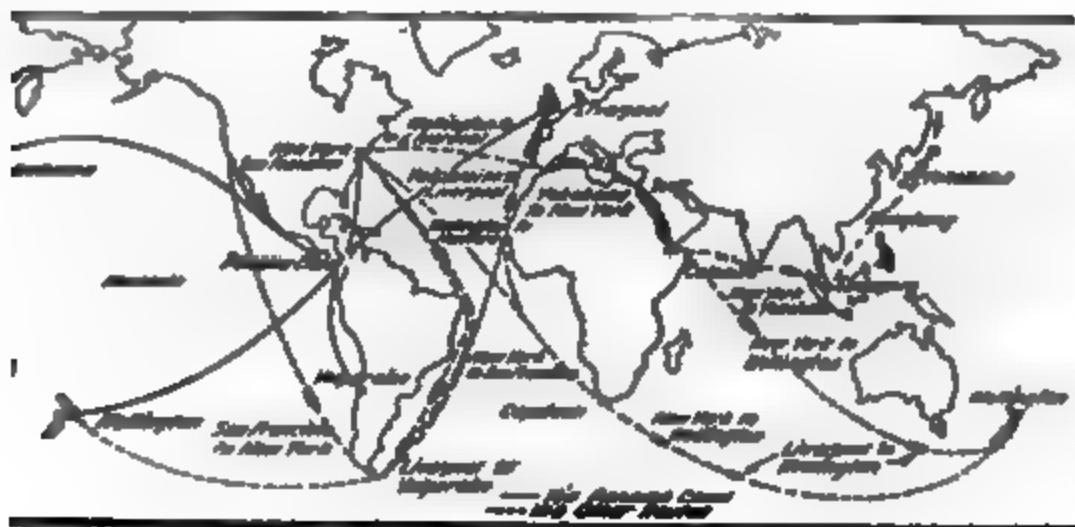
**COMPARATIVE SEA ROUTES FOR FULL-POWERED
VESSELS**



We find that the true equidistant line for Liverpool lies just east of Australia and of Yokohama, while the line for New York lies west of the Philippine Islands and takes in almost all of Australia. The map on page 59, which appeared in a recent issue of the "Panama Canal Record," makes the situation clearer.

It is expected that much of the traffic plying to and from this "twilight zone" will patronize both canals, in which case trips around the world will become no uncommon feat of world-wide shipping. Yokohama used to be the terminus of Far Eastern trade and home-

HOW TIME IS SAVED BY USE OF PANAMA CANAL

*See Panama Canal Record.*

ound steamers used to trace back their courses. Now traffic conditions will extend the route across the Pacific to pick up the increasing freight from the west coast of North America to Europe and will then complete the circle.¹

Reduction of distance means trade expansion.—But reduction of distance is only a means to an end. The end is trade expansion through increased salability resulting in reduced transportation costs. Economically, therefore, the most important effect of the opening of the Panama Canal will probably prove to be the fact that great industrial centres of the northeastern United States, stretching from New England as far south as Boston, are brought nearer to many important markets, such as Siberia, Japan, China, Australia, New Zealand, Chile, Peru, etc. It will expand the field in which the products of that large area can be sold in

In this book is going to press, this expectation has become a reality in several instances, a number of shipping companies having established services clear around the globe.

competition with the wares offered by their powerful rivals.

In the same way Pacific industries will be able to strengthen their foothold in Europe. Thus the canal will materially aid in the national movement for greater prosperity through greater exports. But the effect will be reciprocal. Importation of goods to be bought in exchange for these materials will be facilitated to the same degree. This is of vital importance, for in the long run export expansion is impossible without a corresponding increase in the imports. Indeed the experience of all creditor nations—and the United States has become the World's creditor nation—has been a relative slowing up of exports as against a rapid increase of imports.

Shorter distances mean larger tonnage supply.—One very important by-product of all short cuts in shipping routes is easily overlooked, namely, increased tonnage efficiency. We referred to it in the discussion of the Suez Canal. To the extent that the trip around the Horn is longer than that around the Cape, the tonnage set free by the opening of the Panama Canal would be greater than that released by the Suez Canal (other things being equal). Of course, as was pointed out before, increased trade rapidly absorbs the resulting surplus and renders the effect on tonnage rates almost unnoticeable. Possibly under normal conditions of tonnage supply a slight reduction of freight rates would partly reveal the effect.

The dawn of the Pacific age.—The fate of the Panama Canal is inseparably linked up with that of the Pacific Ocean. For the present the Suez Canal taps the world's oldest areas, connecting the two most densely populated

continents. But there are those who believe that the center of gravity—economically and politically speaking—is gradually shifting to the Pacific. One hears of the “dawn of the Pacific age,” and the dominion of the Pacific is referred to as the problem of the Twentieth Century. Lord Palmerston said, “To control the Pacific is to control the world.” Similar expressions are accredited to Napoleon, Seward, the Marquis Ito and others. Historians speak of the westward march of civilization, showing how the center of gravity has shifted from the Mediterranean to the Atlantic; and now prophetic economists add that it will move from the Atlantic to the Pacific. “The star of empire will not stay its progress westward because of an ocean, which no longer exists for thought or speech, and which will always be necessary for commerce. The East which is the terror of Europe is the West to us, and we are as necessary to it as it is to us in the economic and commercial developments which follow all great wars, and will follow this in proportion to its size.”¹

It is possible that the European War has accelerated this shift. Great men, such as Frank A. Vanderlip, think so. They argue this way: American war loans to Europe have piled up an enormous trade balance in favor of this country. If Europe is to pay her debts, the trade balance will have to be reversed, unless America finds new markets which can absorb her exports. Asia alone can supply these markets. An industrialized China can readjust the dislocated economic situation of the world. Or to quote from a cablegram sent by Mr. Vanderlip

¹ From an editorial entitled “The Westward Look,” in *New York Times*, May 16, 1920.

from Tokio during his visit to Asia in the Spring of 1920: "The war's great loss will be more than compensated if the East is organized industrially. If America could succeed in breaking down the existing distrust and prejudices it would be rendering the greatest service to the world—greater than mere financial co-operation." And the New York Times adds editorially: "America was summoned to redress the political balance of Europe and has now to redress the economic balance of the world through Asia."

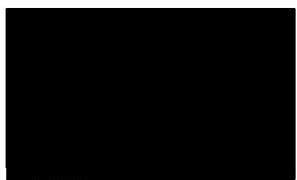
The Panama Canal is bound to benefit by such developments.

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PART II

POR TS AND TERMINALS



CHAPTER IV

OCEAN TERMINALS

Good terminals indispensable to efficient transportation.—It is an elementary traffic law that the capacity of a transportation line depends upon the capacity of its terminal. This is true of railroads and equally so of shipping. The terminals of ocean traffic are the ports. Port efficiency, therefore, is vital to efficient ocean transportation. It is of a double nature; either organic or functional, that is to say, it is either a matter of port construction, or of port operation, or of both combined. Port construction affects the draft and length of the ships which may use it; on port operation depends their "turn-around." And since, in the case of the ocean carrier, economy depends upon size, i. e., the carrying capacity available, and also on the frequency of sailings or the number of trips the vessel makes, we see that port construction and operation can through efficiency add to, or, through inefficiency, detract from the available tonnage supply as effectively as can a Hog Island or a submarine.

The war has laid bare this truth and has put its finger on the Achilles Heel of the national and international transportation system. The world, hungry for ships, learned how to accelerate the "turn-around" by providing better and more efficient port operation. Staggering under the load of the high cost of living, such as only a world war can produce, it realized the inefficiency and the ensuing costliness of dock operation. The medieval drayage system, the antiquated lighterage system, the

appalling lack of machinery,—all these defects resulting in considerable “*frais parasites*” (parasitic expenses) of terminal handling in the face of serious labor problems and rising prices, grew in relative importance so that at last they were discovered by the general public.

Grosvenor M. Jones in his “*Ports of the United States*”¹ estimated that the average expense of hauling a ton of freight 240 miles in the United States was 74 cents, as against 75 cents for hauling the same ton at the terminals from station to consignee. In the case of a shipment of package freight from New York to Philadelphia, the railroad cost for the 90 mile haul was said to be but a fraction—about $1/14$ —of the terminal handling expenses at the two big cities. Also, it is claimed that it is cheaper to ship goods 1,320 miles from Boston, Mass., to Havana, Cuba, than from one pier to another in Boston harbor.² These figures tell the story and reveal the problem, but it is the solution which interests us here.

Port terminology.—A good step forward was made when W. J. Barney, Secretary of the American Association of Port Authorities, succeeded in having a number of definitions of port terms adopted, thereby clarifying to some extent a rather neglected terminology. We give here some of the most important definitions:

Wharf—general term for a landing place for vessels and cargoes.

Pier—wharf structure projecting into a stream or fairway.

¹ See Grosvenor M. Jones, *Ports of the United States*. Dept. of Commerce, 1916.

² See R. S. Mac Elwee, *Ports and Terminal Facilities*, p. 5.

Slip—open water spaces or docks between adjacent piers.

Quay—wharfs parallel to or lying along the shore.

Dock—terminal in which the slips or basins adjacent to the wharves are provided with locks and gates.

A port should be distinguished from a harbor. The latter lies in a sheltered body of water of sufficient depth to enable a ship to take refuge therein from the stormy high seas.

A port is a harbor plus terminal facilities, i. e., arrangements either mechanical or otherwise, which facilitate the transfer of passengers and goods.¹

Different types of harbors.—There are different types of harbors. The geographer distinguishes five types on the basis of their physical nature. Harbors may, in the first place, be formed by drowned valleys—like those of Norfolk, Baltimore and Buenos Aires, where entire plains were submerged; or like Rio de Janeiro, New York, Vancouver and Seattle, where uneven land surfaces cause a rather complicated water surface; or like San Francisco, where a whole mountain range has been depressed and a former mountain pass is now “the Golden Gate,” the gateway of the harbor. Frequently rivers drain into these drowned valleys and deposit sand and debris near the entrance to the sea, thus rendering constant attention to the channel necessary.

Barrier harbors, in the eyes of the casual observer, seem to be somewhat similar to the foregoing, but they owe their existence to wave and tidal currents which

¹ See R. S. MacElwee, op. cit.

have developed barrier beaches or bars along a given stretch of coast line. Ships find a quiet water anchorage back of the sand ridge, as in Provincetown, Galveston, Danzig and Durban. The constant shifting of the sand makes maintenance difficult.

Historical reasons largely account for the location of many harbors which are a considerable distance up streams. If present conditions alone were to determine the location, the number of river-ports would be considerably smaller. As it is, some of the world's most renowned ports belong to this group.

London: About 67 miles up the Thames.

Hamburg: About 67 miles up the Elbe.

Bremen: About 54 miles up the Weser.

Antwerp: About 45 miles up the Scheldt.

New Orleans: About 106 miles up the Mississippi (now short cut).

Philadelphia: About 61 miles up the Delaware (102 miles from the ocean).

Baltimore: About 11 miles up the Patapsco (151 miles from the ocean).

Portland, Ore.: About 112 miles from the Pacific Ocean.

The millions which are spent on river improvements to enable these long established emporia to hold the trade they won in the days when sea-going craft could readily reach their wharves and warehouses are not a useless tribute to the past; they are a paltry sum when compared to the cost that a complete shift of trade centres would involve.

But not all ships can call at these ports; a few of the ocean greyhounds are kept out by their excessive draft. For these, special docks have to be provided at

the mouth of the river, such as at Cuxhaven (Hamburg), Bremerhaven (Bremen) and Tilbury (London). It is easier to bring to them by rail or otherwise the passengers and the relatively small amount of cargo that these giants carry, than to deepen the river to a point that would accommodate them. This question of harbor improvement will be given further attention in connection with a discussion of the economies of ship size.

Rivers and tides.—It is not the length of a river which determines its power to create great seaports. The Mississippi, "Father of Waters," has a natural depth over the bar of only 13 feet. The Danube, which drains 316,000 square miles, has a natural depth of from only 7 to 12 feet. The Nile below Cairo is navigable only with difficulty. Not the length of the stream but the height of the tide counts. Thus the Mersey, an insignificant river, makes Liverpool a great seaport, owing to a tidal rise of 27 feet. London and New York are likewise aided. The significance of the tide is admirably stated in the following quotation:¹

"If the moon were suddenly to be struck out of existence, we should be immediately apprised of the fact by a wail from every seaport in the kingdom. From London, from Liverpool, from Bristol, we should hear the same story—the rise and fall of the tide had almost ceased. The ships in dock could not get out; the ships outside could not get in; and the maritime commerce of the world would be thrown into dire confusion." But that does not mean that a high tidal rise is in itself a desirable characteristic of a great seaport. It is better

¹ See Gregory, Keller and Bishop, *Physical and Commercial Geography*, p. 13.

than an impassable river, but better yet is a sufficiently deep harbor without any excessive difference between ebb and flow.

Less important types of harbors are the coral reef harbors, such as Ireland Island, Bermuda. Such harbors rarely become great ports for they lack the all-important hinterland. They are apt to make valuable coaling stations and are of strategic value. A crater harbor, Lyttelton, N. Z., deserves mention more as a geographical curiosity than because of its commercial significance.

Some important ports owe their existence entirely to artificial works—the cutting of a canal like that at Port Arthur, and at Houston, Texas, or the building of a breakwater as at Dover, England, and at San Pedro, Cal., or the dredging of insignificant streams such as the Clyde at Glasgow.

Functions of ports.—We see that men have created ports where nature provided no harbors and again that wonderful harbors, such as some formed by islands, are practically deserted. This simply proves that it takes more than a good harbor to make a great port, and that above all a traffic-creating hinterland is necessary. The function of a port is to facilitate the exchange of goods and passengers between ocean and land carriers. That is the commercial function; it deals chiefly with through freight. This through traffic attracts industries because of the opportunity of getting raw materials cheaply and because of the proximity to a large aggregation of consumers. We may term this the industrial function; it pertains mostly to local freight. A third function which is attracting much attention to-day is the creation of entrepôt or re-export trade. But this is

ore in the nature of a by-product. It flourishes as an adjunct to the other functions, but can hardly be thought of as existing by itself. The greatest port will be that one which is able to function in these different ways with the minimum of friction and the maximum of dispatch.

Importance of physical contact between rail and ship.—The commercial port requires above all, the best possible physical contact between the system of ocean liners and the multitude of tramps on the one hand, and the railroad net, focusing at the port and supplemented by inland waterways, on the other. This physical contact may be brought about in many different ways. Each port, according to its physical peculiarities, has a different problem to solve, but in each case the degree of perfection attained will depend upon a scientific coordination of the existing transportation facilities—both on land and on water.

The ideal port is open to ships of any size at any time. It is surprising how few ports qualify in this respect. Ships of the type of the Leviathan or the Aquitania, when fully loaded, can safely proceed to only one port on the Atlantic Coast of the United States—New York. Boston could receive them at high tide only, and Portland, Newport News and Norfolk only when they are not carrying full cargo. The Pacific ports of San Francisco, Seattle, and Tacoma answer to the above description of an ideal port, as these harbors have sufficient depth for any ship.

Harbor depth and draft of vessels.—While this country has relatively few ideal ports, it nevertheless has the most comprehensive and uniformly developed system of up-to-date ports in the world.

OCEAN SHIPPING

The controlling or minimum depth at mean low water of the entrance and harbor channels at the following ports on the seaboard on June 30, 1914, as reported by the Chief of Engineers, United States Army, together with the mean range of tide and the maximum usable depth at high tide of the entire channel are shown in the following table:¹

Ports	Minimum depth. <i>feet</i>	Mean range of tide. ^a <i>feet</i>	Maximum depth. <i>feet</i>
North Atlantic			
Boston, Mass.	35.00	9.50	44.50
Bridgeport, Conn.	22.00	6.50	28.50
Fall River, Mass.	22.00	4.75	26.75
Hartford, Conn.	12.00	1.00	13.00
New Bedford, Mass. ...	25.00	4.25	29.25
New Haven, Conn.	20.00	6.00	26.00
New London, Conn. ...	23.00	2.50	25.50
New York, N. Y.	40.00	4.50	44.50
Philadelphia, Pa.	30.00	6.00	36.00
Portland, Me.	30.00	9.00	39.00
Providence, R. I.	25.00	4.50	29.50
Wilmington, Del.	15.00	6.00	21.00

South Atlantic

Baltimore, Md.	35.00	1.00	36.00
Brunswick, Ga.	21.50	7.00	28.50
Cape Charles, Va.	12.00	2.50	14.50
Charleston, S. C.	28.00	5.00	33.00
Jacksonville, Fla.	24.50	0.80-4.50	25.30-29.00
Newport News, Va.	35.00	2.50	37.50
Norfolk, Va.	35.00	2.75	37.75
Richmond, Va.	18.00	2.50-4.00	20.50-22.00
Savannah, Ga.	26.00	6.10-6.50	32.10-32.50
Washington, D. C.	24.00	3.00	27.00
Wilmington, N. C.	26.00	2.50	28.50

¹ From Grosvenor M. Jones, *Ports of the United States*. Department of Commerce, 1916.

OCEAN TERMINALS

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Gulf of Mexico

Galveston, Tex.	30.00	1.25	31.25
Houston, Tex.	25.00	25.00
Mobile, Ala.	26.00	1.50	27.50
New Orleans, La.	31.00	.....	31.00
Pensacola, Fla.	31.00	(•)	(•)
Port Arthur, Tex.	26.00	.....	26.00
Tampa, Fla.	24.00	2.50	26.50
Texas City, Tex.	25.00	.....	25.00

Pacific

Los Angeles, Cal.	30.00	5.00	35.00
Oakland, Cal.	23.70	4.50	28.20
Portland, Oreg.	•28.00	7.00	35.00
Port San Luis, Cal.	20.00	3.75	23.75
Sacramento, Cal.	7.00	.....	7.00
San Diego, Cal.	30.00	5.00	35.00
San Francisco, Cal.	•40.00	3.75	43.75
Seattle, Wash. ....	(•)	.....	(•)
Stockton, Cal.	6.00	3.00	9.00
Tacoma, Wash.	(•)	13.00	(•)

a As reported by the Coast and Geodetic Survey.

b Being dredged to 35 feet.

c Being dredged to 30 feet.

d Being dredged to 21 feet.

e Deep enough for any draft.

f In north channel around the bar and from 30 to 60 feet within the harbor.

Great Britain is less favorably situated. This was brought out in an investigation carried on by the Dominions Royal Commission. This commission recommended, along with many other proposals:

"The establishment by government ownership or subsidy, of several great lines of steamships connecting the ports of the Empire, and an inter-imperial scheme of deep-harbor development to accommodate the ships, 660 ft. long with 38 ft. draft, calculated to have the ultimate

practical economies of freight transportation which would make tariff discrimination unessential in imperial preference.”¹

It was found that of England’s ports, only London, Liverpool and Southampton are able to take these deep-keeled vessels now, at high water. Other British deep harbors are Singapore and Hongkong in the Far East; Melbourne, Sydney and Hobart in Australia; Capetown and Durban in South Africa (these last two would need minor improvements); Halifax, Quebec, Vancouver and Prince Rupert in Canada; and Bermuda and Tahiti on the Panama route from the United Kingdom to Australia. But it should be understood that vessels of 38 feet draft are as yet rare exceptions. A port that possesses a 25-foot channel satisfies the ordinary shipping demands.

Other important physical requirements of ports.—The latest data on the controlling depth of water at United States ports were compiled by the Secretary of the Ports and Harbors Facilities Commission of the United States Shipping Board, and were published in 1919 at the request of the Senate Committee on Commerce. This report is based principally on the answers received to a questionnaire which was sent out to 27 leading ports. These answers cover the important physical requirements of a modern port and may therefore be used as a basis of discussion.

The list of items covered is as follows:

- (1) Controlling Depth of Water.
- (2) Berthing Capacity in Linear Feet.

¹ See *The Americas*, February, 1918, p. 2.

- (3) Names of Railroad Lines Serving the Port.
- (4) Dry Docking Facilities.
- (5) Anchorage Area Available within Harbor.
- (6) Fresh Water for Boiler and Drinking Purposes.
- (7) Quantity and Characteristics of Electric Current Available.
- (8) Coaling Facilities.
- (9) Fuel Oil Facilities.
- (10) Crane and Derrick Facilities.
- (11) Steamship Lines at Present Using the Port Regularly.
- (12) Grain Elevators and Storage Facilities.

Of course, the facilities of the port of New York, which is in a class by itself, could hardly be satisfactorily covered under these headings. On the other hand, many smaller ports do not possess all of the enumerated facilities. But the list serves to show the essential prerequisites.

In a comprehensive government report¹ we read: "In general there are four fundamental requirements of all-water terminals: (a) good wharves, (b) warehouses and storage facilities, (c) mechanical appliances for transhipment of freight, (d) (this is highly important, though not always practicable) belt-line railway connections with adjacent railroads and industrial concerns so as to co-ordinate water and rail transportation and connect with local production and distribution." "Good wharves"

¹ Report of Commissioner of Corporations on *Transportation by Water, Part III, Water Terminals, 1910.*

is taken here in the general sense of good landing facilities and ought to include piers, wharves, docks, and dolphins.¹ The importance of warehouses and storage facilities, i.e., primarily, transit sheds, arises from the impossibility of moulding commerce into a constant stream of uniform volume. Space must be provided which can hold the overflow when the influx of goods into a port overtaxes the outgoing transportation facilities and exceeds the local demand. The abuse of railroad cars for storage purposes is one of the defects of badly co-ordinated ports. The question of cargo-handling equipment will be taken up at length in another chapter.

Bush Terminal, an ideal industrial port.—An ideal industrial port is the famous Bush Terminal in South Brooklyn, New York.² A detailed description of this extraordinary mechanism reveals fully and clearly what a scientifically organized and mechanically perfect terminal can do in the line of facilitating the exchange of commodities, thus fostering industrial growth.

The Bush Terminal is a city in itself. It is an industrial community with, at present, about 300 manufacturers and jobbers as tenants, located in model loft buildings. Through this terminal city passes one-fifth to one-fourth of New York's foreign trade to-day, estimated for the Bush Terminal alone at one billion dollars in value. The equipment includes eight piers accommodating not less than 25 steamship lines. Its ware-

¹ Dolphins are mid-basin mooring posts, the use of which greatly enhances the berthing capacity of docks.

² The following paragraphs are based upon material supplied by the Bush Terminal Company.

houses serve above 2,000 customers annually and hold a good percentage of New York's raw material imports: Egyptian and Indian cotton, copra, hides, sugar, jute, sisal, coffee, palm-oil, etc. Ocean carriers, warehouses and factories are thus brought into the closest possible physical contact.

But that is not all. The Bush Terminal Railroad with yardage space for over 1,000 standard freight cars, 30 miles of railroad track, train trackage to every building and every pier, and the Bush fleet of tugs, floats and lighters connect with any pier or ship in New York harbor. The Bush equipment of horse and motor trucks maintain a regular collection and delivery service throughout New York and Brooklyn.

Functions of the Bush Terminal Company.—Moreover, the Bush Terminal is terminal agent for all railroads entering New York. Except in a few instances, the flat New York rate (the same that applies to all stations in Manhattan) applies to freight received or delivered at the Terminal. Under this system the tenant shipper of L. C. L. freight delivers his goods to the freight elevator that stops at his floor and gets from the terminal company a bill of lading to destination. The Bush Terminal Company receives this small shipment along with hundreds of others from other manufacturers or warehousing tenants from steamships docking at its piers, from Brooklynites who use the public freight station it maintains, and consolidates all this traffic into through cars either on the individual shipping platform or at a transfer which is maintained for that purpose. The insistent demand on the part of the tenants prompted the Terminal Company to erect a

modern cold-storage plant within the precincts of the Terminal City, enabling the company to extend terminal services and facilities to a large number of shippers of perishables, who, previously, had not been able to take advantage of them.

Since the return of the Terminal to private commercial use, after having served the United States Government as its main domestic supply and shipping base during the war, a new service has been instituted in a new service building in South Brooklyn. Here the Terminal company is prepared to act at the same time in the capacity of a railroad terminal agent, seaboard broker, warehouseman, forwarding agent and carter, though the carting is largely eliminated. Even collections are handled if it is so desired. This service is for non-resident manufacturers who wish representatives in New York for their domestic business in that important market of 20,000,000 buyers (within 2,200 miles of City Hall), or for their exports, or for both. The best illustration that can be given of this point is that of the Holeproof Hosiery Company. The distribution of the products of this company was undertaken, which involved the receipt of the manufactured wares in cases containing many dozens, the placing in stock, the re-packing by sizes and colors into individual packages of varying amounts, the filling of small merchandizing orders, the packing and shipping, the stock accounting, etc.

The Bush plan is the successful application of the co-operative principle to manufacturing and shipping. It reduces the manufacturing overhead as well as the shipping expense to a minimum by rendering possible

the fullest use of the available facilities. It is, as yet, the last word in terminal development.¹

Store-door delivery.—The best proof of the merits of the case is found in the widespread application of this principle outside of the Terminal City. The powerful movement for store-door delivery is nothing but co-operative carting. That particular field of terminal operation—carting—is probably the most archaic and wasteful of any. Dray delivery is a necessary evil and should be reduced to the minimum. It is most wasteful where a “laissez-faire” policy is pursued and draying is performed by a number of private concerns freely competing with each other. The waste is due less to the inefficiency of the vehicle itself than to the loss from idle time—while waiting in traffic congestion, or to be loaded or unloaded or from idle space, owing to under-loading and to criss-cross carting. All of these evils are fully realized and manifold suggestions are under discussion to alleviate them. The waste increases with the size of the city and therefore New York and Chicago are the worst sufferers and at the same time are most desperate in trying to find a remedy for the situation. Chicago is working out a union terminal system of substations by which, through a reduction of hauling distances, the drayage expense would be cut in half. The same principle applied to New York would mean a system of union car float substations distributed at convenient points about the harbor, such as suggested by Mr. Irving T. Bush.

On land the saving could be brought about by the

¹ The latest news about Bush Service tells of the erection of a large Terminal Building in London.

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store-door delivery system, which means that the drayage is to be absorbed by the carriers and that all consignments of C. L. or L. C. L. freight are to be handled immediately upon arrival and delivered to the store-door of the consignee. During the war, the Federal Railroad Administration worked out the details of the scheme. A drayage director was to organize the entire process on the basis of efficiency and elimination of waste. Elaborate rules had been worked out covering the details of the plan, based largely on the suggestions of a Committee of the Public Service Commission and approved by Mr. McAdoo as Director-General of the Railroads.

The idea of store-door delivery is by no means a new one. In 1909 the Pennsylvania Railroad inaugurated, at its own expense, a system of direct consignment in Baltimore as a means of meeting water competition. A similar system had been in operation in Washington for many years. But the Inter-State Commerce Commission ruled that the railroad had no right to discriminate in favor of some cities against others. The abnormal congestion at the port of New York, due to immense war traffic, especially during the winter of 1917-1918, resulted in an effort to clear the piers and remove stock for purely transit purposes, by abolishing the time of treating them as part of the port's warehousing facilities. Formerly a few days' time was allowed to have the necessity of actually storing goods which could not be immediately placed on ships or rehandled. This such warehousing on piers and sidings is a mere misuse of facilities meant for an entirely different purpose and cannot be tolerated when the trans-

ference of goods requires every spare foot of available space. An extension of warehouse facilities would be necessary if the scheme were put into operation. The armistice came before the plans were put into operation and, although much congestion continues to exist, there seems no immediate prospect of seeing the scheme of store-door delivery adopted in New York.

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CHAPTER V

ENTREPÔT CENTRES AND FREE PORTS

Nature of entrepôt trade.—According to the definition given in the preceding chapter, the third function of seaports is to distribute foreign goods to foreign countries. That phase of commerce is known as entrepôt or intermediary trade. The port handling this trade is interposed between a producing and a consuming country just as a middleman stands between seller and buyer. Such trade is supplementary to that which falls to a city because of its own consuming power and its relation to a strong hinterland. Thus London, the greatest consuming centre of Europe, is, at the same time, the greatest entrepôt of the world, although the war has deducted much from her former influence. As the capital of the British Empire, she for decades possessed the most complete net of connections throughout the world, which is the first prerequisite of a great entrepôt.

History of entrepôt trade.—In days gone by entrepôt trade played a relatively more important part than it does to-day. The commerce of Venice, Bruges, Lisbon, Antwerp and Amsterdam during the height of their power was primarily of this type. Several reasons account for this fact. In the first place, the political map was cut up into innumerable small units, so that much trade appeared as entrepôt, which would not be counted as such to-day. In those days entrepôt trade was monopolistic and the monopoly was backed by force of arms. The entrepôt center known as “the staple” owed much

of its prominence to royal "fiat." Moreover, the foreign trade of that period was confined to the exchange of goods between the Orient and the Occident and consisted of just such commodities as are best adapted to this kind of trading—non-perishable valuables of small volume. Entrepôt trade, being indirect in most cases, involves circuitous routing and detours which are too expensive when cheap bulk goods are carried. The small quantities of spice, silk, tea and curios which filled the holds of the small sailing craft could well stand an extra trip of a few days. This counts less the longer the entire voyage. Therefore, the more remote the origin and destination of the traffic, the stronger is the hold upon the trade of the entrepôt. Finally, the demand for Oriental products was very limited and few localities could absorb whole shiploads at a time. Hence these intermediary distributing centres sprang up, which became central markets for as wide a territory as their prowess could hold tributary.

Volume of entrepôt trade of different countries.—It is estimated that more than \$4,000,000,000 worth a year of all the commodities that move around the world in commerce is handled at least twice, going from the place of production to some of the great merchandising ports of another country, to be there resold and exported again to the country where they are consumed. The bulk of the merchandising trade is carried on in the few ports grouped around the British Channel, with London as the leader. The entrepôt trade of this country has assumed large proportions only in recent years, partly owing to the temporary dislocation of merchandising commerce hitherto established.

The following data, which are taken from *The Americas*,¹ March, 1915, referring to the last years before the war, give an interesting comparison of English, German and American re-export trade:

"England's total foreign commerce, including its import and re-export of foreign and colonial goods, averaged \$6,121,499,319 a year from 1909 to 1913, and \$5,036,973,264 from 1904 to 1908. The average of re-exports was \$498,431,527 from 1909 to 1913, and \$393,827,376 from 1904 to 1908. Exports of English products averaged \$2,220,763,559 and \$1,760,406,839. The re-export commerce, counting the value of goods only once, grew from 9.2 per cent. of the total of all the other commerce to 9.7 per cent., and from 22.3 per cent. of the value of exports of English products to 22.5 per cent.

"Of the goods moving seaward out of London during the five years ended with 1912, re-exports averaged \$243,635,267 yearly against \$380,202,981 worth of English exports. In the previous five years it was \$202,222,106 worth of traded products against \$316,207,925 of the produce of English industry. The statistics of the port of Liverpool show an annual average of \$127,395,810 in re-exports against \$682,599,168 of English products in the latter five-year period and \$98,526,556 in re-exports against \$692,964,494 direct exports in the preceding five-year period. London's re-exports rose in value from 63.9 per cent to 64.1 per cent of the exports. Liverpool's rose from 14.2 per cent to 18.6 per cent.

"The trade figures of the German Empire do not give such details as do the British statistics. But the "special" exports are ordinarily subtracted from the general to give German re-exports. There are also special imports. German statistics for 1907-1911 show average yearly re-export trade of \$153,672,832, against general exports of \$1,841,373,792 and a total commerce of \$4,086,820,058. In the 1902-6 period it was

¹ This publication of the National City Bank of New York through various articles has contributed to the literature on this subject and throughout this discussion we have freely drawn from this valuable source.

\$90,812,757 against general exports of \$1,383,285,763, and a general commerce of \$3,052,527,378. Thus Germany's entrepôt trade grew from 6.5 per cent. of the exports to 8.3 per cent., and from 2.9 per cent. of the whole commerce to 3.7 per cent.

"These statistics of England and Germany show that this kind of commerce is growing with and a bit faster than their direct exchange of products. It should be remembered that for years they have had highly developed banking facilities and merchant navies providing the world with direct lines of transportation to them.

"The re-export trade of the United States is now exceedingly small. In 1913 it aggregated \$37,377,791, only 1½ per cent. of all exports and $\frac{7}{8}$ per cent. of all the country's commerce. A large part of it was "trade" only to the extent of passing across the country in transportation. It has been actually decreasing in proportion to the whole trade. The largest single class of products re-exported was fruits and nuts, aggregating \$4,800,000. There was \$4,291,410 worth of chemicals and \$4,476,379 worth of rubber re-exported. In 1909 we re-exported \$1,145,229 worth of coffee, but this trade had dwindled to less than \$500,000 in 1913."

This trade has grown in value during the five years from 1914 to 1918 from \$35,000,000 to \$81,000,000. However, when compared with the increase of total exports from two billion dollars in foreign merchandise exported in 1914 to the five billion dollars in 1918, we see that the relative importance of the American re-export trade has by no means increased, but more likely decreased.

Relative decline and diffusion of entrepôt trade.—Relatively speaking, entrepôt trade is on the wane and the day of the world entrepôt has passed. The explanation for this phenomenon is a simple conclusion drawn from the foregoing. In the first place, monopolies enforced at the point of a gun are no longer in vogue. The nature of trade has also changed. Instead of small

cargoes of luxuries the fleets of to-day are filled with heavy bulk material. It was stated that roundabout routes, involved in entrepôt trade, counted little in former times because, compared with the value of the cargo, the cost of transportation was relatively small. That is so no longer. The rapid growth of population in many countries has scattered the demand, with the result that more and more trading centres have become independent of the entrepôt. We saw how Marseilles, Genoa, Trieste, etc., emancipated themselves from London's influence as a result of the opening of the Suez Canal. The improvement of means of communication has also contributed to this process of diffusion.

Not only did London, as the foremost entrepôt centre, have to lose some of her entrepôt trade because it was replaced by direct trade, but she also had to give up part of her merchandising commerce to rival entrepôt centres such as Hamburg, Antwerp, Amsterdam, Copenhagen and others. It now seems that the Scandinavian cities will become important entrepôt centres for the Baltic and Russian trade, much of which was controlled by Hamburg before the war. The war, compelling short-cuts wherever possible, has accelerated the relative decline of entrepôt trade.

Emphasis should be placed upon the fact that the decrease of this trade is *relative* only. The absolute figures are probably greater to-day than ever before because of the greater value and volume of the world trade altogether.

London's benefits derived from entrepôt trade.—To estimate the significance of entrepôt trade, it is best to study what it has done for London, the greatest world

entrepôt centre of modern times. That it has greatly added to the total volume of foreign business transacted in London is sufficiently proved by the foregoing statistics. This additional business means additional profits to the many branches of the great merchant community and, indirectly, to the city-at-large, thus providing a living for a goodly proportion of London's vast population. It adds to the profits of the merchant as well as to those of the bargeman, warehouseman, banker, indemnity broker and speculator, to name but a few of the long list of those who, in some way or other, directly participate in the community exchange.

The indirect advantages are, if possible, still greater. Without the re-export trade the system of ocean lines focusing in London could not be so complete, the sailings not so frequent, the ships not so full. The accumulation of raw material in the markets and warehouses attracts the feeder lines which take a part to their foreign destination. The ships which bring the silk, wool, linen, etc., from distant ports take coal out and keep up the supply at the valuable strategic coaling stations which add so much to British naval and mercantile prowess.

But the vast accumulation of raw material from almost every port of the world is also of the greatest value to domestic industry. While the foreign manufacturer has to send his representatives to inspect the goods in bond or else rely on the judgment of far-away foreign agents, the British manufacturer has a most wonderful assortment of hides, ores, rubber, etc., at his door. He can inspect and select himself. The contact with large quantities and innumerable varieties of com-

modities builds up in London a fund of expert knowledge such as is found in no other single market for an equally large number of commodities. The trade connection established through the physical exchange of commodities leads to another branch of intermediary trading, purely brokerage trade, which, while directed from London, financed from London and tributary to London never physically touches British soil. On the other hand large quantities of goods are shipped or "consigned" to London without definite arrangements as to who will purchase them. The far-away producer knows that nowhere are there better facilities for handling or better chances for selling than in London. This accounts for the large consignment market of London.

Another by-product of this trade is the concentrated information of men and commodities which forms the basis of the acceptance business. Finally, re-export trade is an important adjunct to a successful foreign trade policy. Oftentimes the exports of a country do not go to the places from which the imports originate. Re-exporting, in that case, permits the all-important proper balancing of cargo movements.

Reasons for London's predominance.—But all these advantages did not fall into London's lap. To be sure much of the trade is London's legacy, left to her by England's century-old liberalism in foreign trade. Probably more is London's heritage as capital of the British Empire. The following figures show to what extent colonial products made up the re-exported articles. During the four years from 1913 to 1916 Great Britain—an London's is the lion share of this merchant trade—bought for reselling, in millions:

	From Colonies	From other countries	Total
1913.....	\$272.9	\$259.2	\$532.1
1914.....	242.1	221.5	463.6
1915.....	275.9	205.2	481.2
1916.....	261.3	212.5	473.7

Then there is England's geographical position, favorable to entrepôt trade with northern Europe, practically lying at anchor, as it were, at the very gateway to the North Sea.

But much trade flows to London only because of the financial control which London bankers and promoters have over foreign producing enterprises. In rubber plantations alone England, that is, chiefly London, has invested upwards of \$350,000,000. This accounts for much of the rubber re-export trade of London, to give only one example. But apart from these major factors, a number of "institutions" of the London market were built up in the course of centuries, all of which form an essential part of the complex mechanism. These "institutions" are the following:¹

"The 'institutions' that make this possible are: first, the system of warehousing, with its certificates or warrants that give absolute title to property and are easily negotiable; second, the organized facilities in connection with these warehouses and the markets by which raw commodities are received and either graded as they are, or separated and mixed with others to form standard blends readily marketable, this with rigid integrity and expertness that the whole world trusts absolutely; third, London's speculative community, which has unlimited money and banking credit ready to buy at a concession in price almost any marketable commodity; fourth, the organized markets or peri-

¹ See *The Americas*, April, 1916, p. 2.

and until the imported goods enter the domestic market."¹

• **History of free ports.**—A few words may be said about the history of "free zones." The prototype is the free port of Hamburg, although such trading centres as Hongkong and Singapore offer similar advantages and are older. When Bismarck tried to win the representatives of the free city of Hamburg over to the Empire, serious objections were raised, prompted by the fear that the entry into the German customs system would sound the death-knell for the wonderful merchant trade of that city, so laboriously built up by generation after generation. A compromise was reached whereby the "free port," an area of sufficient size to offer ample space and facilities for re-export trade, was created, while the rest of the city entered the customs union. This was in 1882. The success of the plan was such that other cities adopted the scheme.

Copenhagen opened a free zone in the early nineties. Its business grew so rapidly that continual enlargements were necessary. For more recent developments we quote:²

"Spain, in 1914, authorized a free zone at Cadiz. Barcelona secured the same privilege in 1916, Bilbao and Santander in 1918. There has been a temporary setback in improving the zones under the privilege, owing to the fact that the Spanish government reserved the right to a revocation at any time and did not offer the security of a term grant.

"In the case of Barcelona this condition has now been satisfactorily overcome and funds have been appropriated and plans

¹ United States Tariff Commission, *Information Concerning Free Zones in Ports of the United States*.

² United States Tariff Commission, *Information Concerning Free Zones in Ports of the United States*, 1919, p. 20.

FREE ZONE

The movement of the free zone in Europe has been started, though not yet completed, in Spain, Portugal, and Coruna under Spanish law.

The free transit trade of the British Isles began on June 1, 1919, and is now established between Gothenburg and Malmö. It is expected that regular reports to be issued will cover the ports of Christiania, Bergen, Christiansand, and Trondhjem.

The privilege by law and the late establishment was being given to the port of Antwerp.

In the case of Holland and Belgium the movement has been started as the others.

Free Zones.—While there is a strong desire to have the installation of free zones, the Free Zone Association of the United States Tariff Commission has made a study of foreign institutions and American conditions and has advised against the enactment of legislation and operation of such zones. The association, however, follows four lines:

1. The "free zones" has been adopted by the "preference" and "tariff" constitution.¹ But it is not possible to make one port a "free zone" and give preference from others, since the tariff which permits all preferential treatment.

¹ See Part I, Article I, Section

to install free zones, though not all may take advantage of this privilege.

(2) Free zones are a violation of the protectionist principle which is the corner-stone of the fiscal policy of this country. Theoretically, it may be argued that to make trade in foreign commodities easier, reduces the chance of domestic trade. But practical experiences of other countries seem to dispute that, even if a slight increase in competition along some lines resulted, the ensuing advantage would more than counterbalance this possible loss. And after all, there are some Democrats and more free traders left!

(3) The geographical position of the principal ports of this country is different from that of those ports of the world which have become the leading entrepôts, such as London, Antwerp and Rotterdam at the entrance to the North Sea, Hamburg in a strategic position for the Baltic trade, Singapore at the gateway to the important Eastern markets, and Hongkong, an island at the mouth of a big river offering a natural gateway into China. In reply to this, one may point to the fact that the opening of the Panama Canal means a partial re-alignment of the world's trade routes, and that this country will be the main beneficiary of this change. Furthermore, in view of the increasing importance of the Far-Eastern trade and that of the West Coast of South America, the position of this country, situated as it were, in the strategic center from which it can distribute to one continent the goods collected from the other, is not without its potentialities.

(4) It is argued that the existing facilities of bonded warehouses, bonded manufacturing warehouses and

drawbacks are sufficient. But the consensus of opinion of almost all the interested parties who testified at the hearings held by the Tariff Commission in various cities of the United States was to the contrary. It was said, in the first place, that the present system resulted in the useless tying-up of considerable amounts of working capital during the period that goods are held in bond. While the law allows the refunding of 99 per cent of the import duty paid on re-exported goods, the merchant cannot use this amount during the time intervening between importation and exportation. There are also numerous other factors to be considered which have to do with the practical operations of re-exporting, and which arise largely out of the intricacies of the present system. So complicated is the procedure in making claims for the drawback and in proving the identity of the re-exported goods that for this reason alone many producers do not find it worth while to apply for drawback at all, while large-scale industries find it necessary to go to the expense of employing experts permanently to look after their drawback interests. It can hardly be said under such circumstances that the present system is apt to aid in the building up of a large American re-export trade in competition with that carried on from European free port or free trade, or quasi-free trade countries.

Advantages of free zones.—The superiority of a system of free zones is furthermore emphasized by its positive advantages, none of which can be claimed for the present system. Entry and clearance of vessels bringing or fetching entrepôt trade are simplified by the elimination of the endless red tape which is necessitated by the enforcement of the customs laws. To be exempt from

these would be in itself a strong stimulus to trade. That "time is money" has never been so true as to-day in view of the present cost figures for ship operation and high prices in general.

Secondly, re-export trade moves both in and out; in that way it provides employment to ships in both directions. It tends to equalize inbound and outbound traffic and by doing so remedies one of the most serious defects of our present foreign shipping situation, the lack of the proper balance of cargo movements to and from most parts of the world. With Europe we have an export surplus, with South America an import surplus, etc.,—in each case, a situation which interferes with the most economical operation of shipping. In so far as free ports or free zones create or encourage re-exporting they contribute to a better equalization of import and export cargoes.

The free zone also offers better facilities for such operations as mixing, sorting, cleaning, repacking, etc., than does the bonded warehouse, and this again aids in building up re-export business. Furthermore, some manufacturing processes, such as the making of fertilizers for export out of raw materials gathered from different corners of the globe, would likewise be stimulated by the establishment of free zones. Finally, the re-export trade would be rendered immune from the handicaps which arise out of a fluctuating tariff policy. Minor advantages are: a reduction in the cost of drayage, opportunity for displays of goods, greater value of warehouse receipts, etc.

Surely, enough has been said in defense, or rather on behalf of free zones to prove the advisability of their

establishment in this country at a time when every encouragement should be given to help establish our newly created merchant marine and to assist our export trade the employer of our ships, to safely weather this difficult period of readjustment.

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CHAPTER VI

THE WORLD'S LEADING PORTS WITH SPECIAL REFER- ENCE TO THE PORT SITUATION IN THE UNITED STATES

Difficulty of comparative statistics.—Comparative port statistics is a precarious subject. Together with all international comparative statistics it shares the difficulties which arise from the lack of a satisfactory common denominator. If we make value the basis, comparison becomes vague because of exchange fluctuation, and if we try to base our comparison on the weight of cargo handled we either find no data at all for most countries, because of the manifest difficulties of obtaining such totals, or else we discover that a ton in our country weighs more than a ton in other countries. In the table appearing in the *Statistical Abstract of the United States*, giving the vessel tonnage movement in the foreign trade of the principal ports of the world, due warning is given. We read: "The figures are not comparable." Authorities state that if the same vessel were measured according to the laws of the various countries the tonnage results would vary at least 30 per cent. Moreover, there are several kinds of tons to choose from: gross registered tons, net registered tons, and dead-weight tons. Some countries differentiate tonnage with cargo from tonnage in ballast; others do not. Some countries count the same ship at each port on the same voyage; others do not. We see that the variations are plentiful and

that all these difficulties are accentuated to-day. The war has thrown foreign exchange into a chaotic condition; it has dislocated—partly temporarily, partly permanently—the trade of the world, pushing new ports to the fore and blotting out others. Large sections of the world are in a state of economic upheaval and are for the time being “hors de concours.” While these considerations detract much from the value of the table on page 99, nevertheless, it may not be without interest. The figures are taken from a table given in the *Statistical Abstract of the United States*, which, in turn, is compiled from the official reports of the respective countries.

Types of ports.—A glance at these figures will show us that ports may be divided into three classes, thus:

1. Ports with fairly well balanced trade, such as Kobe, Singapore, Shanghai and Glasgow.
2. Ports with excess of imports over exports, such as Liverpool, London and Manchester.
3. Ports with excess of exports over imports, such as New York, Montreal, Philadelphia, New Orleans, Buenos Aires and Sydney.

In the first group we find great entrepôts like Hamburg, Antwerp and Singapore. Before the war the “unfavorable trade balance” of the ports in the second group reflected the position of the various countries as creditor nations. During the war the excess of imports continued, though for entirely different but well-known reasons. In the third group we find the New World ports with their heavy exports of grain from Montreal and Buenos Aires, of cotton from New Orleans, and of manufactured products and all else from New York.

THE WORLD'S LEADING PORTS

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VALUE OF FOREIGN COMMERCE OF PRINCIPAL PORTS OF THE WORLD ARRANGED BY COUNTRIES

(The data are based on the latest official information available in this country)

VALUE IN MILLIONS OF DOLLARS

LOCATION	Calendar Year	Imports	Exports	Total Commerce
United States Seaports: (customs districts)				
New York	1919	2,064.7	3,456.2	5,521.0
New Orleans	1919	177.3	503.1	740.4
Philadelphia	1919	153.6	519.0	673.4
Massachusetts (Boston and others)	1919	299.4	234.5	633.9
Washington (Seattle and others)	1919	195.9	202.3	488.2
Galveston	1919	17.7	487.7	485.4
San Francisco	1919	238.0	240.5	478.5
Maryland (Baltimore and others)	1919	38.9	263.7	302.6
Virginia (Newport News, Norfolk and others)	1919	4.9	175.0	179.9
United Kingdom Ports				
Liverpool	1918	2,357.6	966.2	3,323.8
London	1918	1,873.5	763.7	2,637.2
Manchester	1918	380.1	140.6	521.1
Glasgow	1918	242.7	127.1	409.8
Hull	1918	368.4	71.5	439.9
Bristol	1918	224.0	4.3	228.3
Southampton	1918	143.6	49.6	193.3
Cardiff	1918	73.6	92.4	164.8
Other Ports				
Montreal (Canada)	1918	186.1	397.0	583.1
Buenos Aires (Argentina)	1918	415.0	402.1	817.1
Havana (Cuba)	1918	213.3	88.6	300.8
Rio de Janeiro (Brazil)	1918	119.4	65.4	184.8
Santos (Brazil)	1918	66.9	97.4	164.3
Vaiparao (Chile)	1918	87.7	28.8	116.5
Yokohama (Japan)	1918	256.3	406.9	665.2
Kobe (Japan)	1918	300.6	268.6	539.2
Osaka (Japan)	1918	68.5	202.1	270.6
Singapore (British Empire)	1917	276.3	264.3	530.6
Calcutta (British Empire)	1918	188.1	273.8	461.9
Bombay ¹ (British Empire)	1918	184.3	247.0	431.4
Alexandria (British Empire)	1918	165.8	201.6	367.4
Sydney ² (British Empire)	1918	135.9	175.8	311.6
Melbourne ² (British Empire)	1918	100.2	85.9	186.3
Shanghai (China)	1918	256.4	240.1	496.5

¹ Year ending March 31.

² Year ending June 30.

In comparing these figures the rapid decrease in the purchasing power of money between 1912 and 1918 should be borne in mind.

In this table we miss many well-known names such as Antwerp, Hamburg, Marseilles, Genoa, and so on. In the case of these ports the latest available data are either too old to be of any value for purposes of comparison, or else they merely reflect the unfortunate results of the war. We therefore omit statistics of the trade of the ports of the continent of Europe. According to latest reports, Antwerp has become the leading port of Europe and the second port of the world.

A comparison of London and Liverpool.—We see that in 1918 New York excelled her nearest rival, Liverpool, by almost a billion, and London, by almost a billion and a half. For decades London had held first rank until about 1910, when New York overtook her. The victory of Liverpool over London¹ is largely the fruit of war conditions. The war concentrated an abnormal mass of shipping on the North Atlantic route, and for that traffic Liverpool is the natural European terminus. Furthermore, all ships invading the Thames during Germany's submarine campaign were exposed to grave risk of loss, not to speak of the military consideration which compelled shipmasters to follow usual channels marked out by the admiralty. Moreover, Liverpool has a more compactly built port than London, enjoyed unified port control more than fifty years before the latter, while the Mersey is a wider stream than the Thames. Liverpool's trade is more in the nature of through traffic. London was the biggest entrepôt centre of the world, and relatively speaking, entrepôt trade is on the wane. The return to normal may reduce Liverpool's lead, but it is doubtful whether Liverpool will have to part with the honor of being England's leading port. The following figures show the gradual change in the relative position of the two.

VALUE OF TOTAL TRADE (IN MILLIONS OF DOLLARS)

	London	Liverpool
1913.....	\$ 1,997.2	\$ 798.3
1914.....	1,921.5	1,640.4
1915.....	2,409.6	1,906.9
1916.....	2,655.0	2,309.5
1917.....	2,453.2	2,895.2
1918.....	2,637.2	3,323.8

¹ See *The Americas*, July, 1919, p. 29—"A Comparison of London and Liverpool."

Weight statistics.—So far all statistics have been given in dollar value. That, however, does by no means indicate the relative importance of different ports to shipping. The great coal ports, such as Cardiff, Newcastle and Las Palmas (Canary Islands) mean much more to shipping than the money value of these imports and exports would reveal. Thus, to give one example: in one year the net registered tonnage entering and clearing at Cardiff amounted to twelve million tons as against fourteen million at Liverpool; but the value of Liverpool's trade was almost twenty times that of Cardiff. Between these extreme instances, every form of difference may be found. Another matter to be considered is the fact that different commodities require different types of steamers. Thus Liverpool is a great liner port while normally Cardiff is the greatest rendezvous for tramps in the world.

General aspects of the port situation in the United States.—We now turn to the port situation in the United States. Following the lead of the government statistics we may divide seaports into four classes:

- Atlantic Coast Ports.
- Gulf Coast Ports.
- Mexican Border Ports.
- Pacific Ports.

The third group, however, consists only of the relatively unimportant port of San Antonio, so that, in the main, we deal only with three groups. The table¹ on page 102, shows the net tonnage of the vessels which entered at and cleared from these ports:

¹ Statistical Abstract of the United States (fiscal year ending June, 1919).

**VESSELS ENTERED AT AND CLEARED FROM SEACOAST
CUSTOMS DISTRICTS OF THE UNITED STATES
FROM AND FOR FOREIGN COUNTRIES**

TONNAGE, YEARS ENDED DEC. 31, 1918 AND 1919

(The "net tons" equals 100 cubic feet of carrying capacity, exclusive of deductions for space occupied by cabins, machinery, etc.)

CUSTOMS DISTRICT	1918		1919	
	Entered. Net tons.	Cleared. Net tons.	Entered. Net tons.	Cleared. Net tons.
Atlantic Coast:				
Connecticut	13,067	314	6,700	225
Georgia	264,949	184,829	351,300	876,082
Maine and New Hampshire	640,317	676,141	800,154	950,346
Maryland	1,682,236	1,470,793	1,984,099	2,634,925
Massachusetts	1,386,917	1,060,955	1,771,803	1,283,781
New York	11,381,027	11,057,530	13,974,732	14,427,120
North Carolina	26,674	8,194	33,631	39,596
Philadelphia	2,021,704	2,043,841	2,700,532	3,315,297
Puerto Rico	300,108	361,854	430,613	456,423
Rhode Island	86,827	74,906	104,008	152,518
South Carolina	84,765	27,107	141,016	125,041
Virginia	297,760	2,338,229	1,378,957	2,910,796
Gulf Coast:				
Florida	1,333,707	1,289,782	1,547,874	1,547,900
Galveston	966,090	1,010,694	1,182,919	1,420,575
Mobile	342,745	348,311	498,797	711,398
New Orleans	3,215,036	2,921,506	3,141,405	3,469,573
Sabine	1,074,189	1,258,648	1,143,805	1,460,045
Mexican border:				
San Antonio	90,538	89,398	81,235	82,330
Pacific Coast:				
Alaska	221,405	232,864	175,380	183,410
Hawaii	446,474	158,341	501,941	144,175
Oregon	22,135	99,917	20,734	137,806
San Francisco	1,063,763	1,288,727	1,199,097	1,363,067
Southern California	68,980	181,297	179,388	254,343
Washington	3,329,294	3,423,541	2,905,715	3,115,485
Total seaports	30,999,797	31,805,718	36,381,268	40,760,444
Recapitulation.				
Atlantic Coast	18,826,461	19,304,603	23,836,304	36,581,341
Gulf Coast	6,930,767	6,826,940	7,510,800	8,599,560
Mexican border	90,538	89,398	81,235	82,330
Pacific coast	5,152,031	5,684,687	4,982,834	6,317,913

The most important ports of the first group are, for the North Atlantic: Portland, Boston, New York, Philadelphia and Baltimore, besides Norfolk and Newport

News. Of these, New York is in a class by itself. To use a phrase of Professor E. J. Clapp: "There are two sorts of seaports along the Atlantic Coast, New York and all others."¹ The "others" are known as "outports."

New York's predominance.—The predominance of New York is illustrated by the following table which shows that through this port has passed, during the last fifty years, from one-half to two-thirds of the entire foreign trade of the country. Only of late a drop in New York's percentage was caused by increasing traffic congestion in its harbor and was, as we shall see, accentuated by the railway and shipping policy of the administration.

TABLE SHOWING POSITION OF NEW YORK IN THE FOREIGN TRADE OF THE UNITED STATES

Fiscal years ending June 30 (in millions of dollars).

	New York (Customs District)		United States		New York's per cent of whole	
	Imports	Exports	Imports	Exports	Imports	Exports
1870	281	196	436	393	64.4	50.0
1880	460	393	688	835	68.8	46.9
1890	516	349	780	858	65.4	40.6
1900	537	519	850	1,394	63.2	37.2
1910	936	652	1,557	1,745	60.1	37.3
1915	981	1,194	1,674	2,769	56.6	43.1
1916	1,192	2,232	2,198	4,339	54.2	53.8
1917	1,338	3,053	2,659	6,290	50.32	48.53
1918	1,261	2,613	2,940	5,920	42.5	44.1
1919	1,433	3,203	3,096	7,232	40.0	44.3
1920*	2,906	3,384	5,115	8,198	56.8	41.4

* *The World Almanac and Encyclopedia*, 1921.

¹ E. J. Clapp, *Port of Boston*, p. 25.

the back
Street Journal esti-
the world's sea-born
trade.

value of the trade of
significance as a ship-
ing port. In the following table
we find shipping using the
larger percentage o-

FOREIGN TRADE ENTERED AT U.S. PORTS (NET TONS)

Commodity	New Orleans, La.		Baltimore, Md.		Galveston, Tex.	
	Entered	Per cent	Entered	Per cent	Entered	Per cent
Cotton	61,000	5.5				
	90,000	3.9				
Wool	350,000	9.3	100,000	2.7		3.0
	632,000	12.6	186,000	3.7		3.2
Leather	458,000	7.3	272,000	4.3		3.1
	761,000	5.0	1,503,000	9.8		11.8
Iron	739,000	5.6	744,000	5.5		13.0
	1,224,000	6.4	1,115,000	5.9		47.5
Wool	1,749,000	6.6	1,377,000	5.0		86.4
Leather	3,064,000	8.6	2,043,000	7.3		1,562.00
	2,844,000	7.4	2,528,000	6.9		1,167.00
Iron	2,833,000	7.7	2,635,000	7.1		1,060.00
Wool	3,019,000	9.0	1,795,000	5.0		925.00

be found in the fact that New
Orleans is a port and that liners have a
large share of the trade. The Mauretania, for in-
stance, carries more cargo than many a tramp
steamer, and trades at the different sea-
ports. New York's share of this country's

total trade would be nearer the tonnage percentage than the value percentage.

History of New York's ascendancy.—New York's predominance dates back to the opening of the Erie Canal, which made that city the gateway for western produce destined for Europe, and agricultural products formed the bulk of our exports for the better portion of the nineteenth century. When the Railway Age came, New York's lead was so pronounced that the railroads found it wise to adjust themselves to the situation, with the result that as it was said of old, "All roads lead to Rome," to-day all roads, i.e., all trunk lines, lead to New York. New York has three through routes of its own to Chicago—the Erie and two New York Central lines. In addition, New York has two roads to Buffalo—the Delaware, Lackawanna & Western, and the Lehigh Valley. At Buffalo these two connect with such lines as the Grand Trunk, the Wabash, and the Michigan Central, all leading to the West. Besides these roads of its own, New York has direct connections—by land or by water—with all railroads that serve its competitors in the North Atlantic group. The Baltimore & Ohio and the Pennsylvania run into New York, if not over tracks at least by carfloat; the Norfolk & Western and the Chesapeake & Ohio connect with New York through the Old Dominion Steamboat Company in which they are part owners.

With this unique position as a railroad centre, New York would have still further encroached upon the rights of its outport competitors had not the Interstate Commerce Commission adjusted the rates in such a way as to give the southern ports at least a fighting chance.

The Port differential rate situation.—The early severe competition between the North Atlantic ports from Baltimore to New York, inclusive, for grain, which for decades was by far the most important item in the export trade of the country, resulted in a set of "port differentials" on all grain from grain-producing States of the Middle West. These port differentials for the export of grain form the nucleus of a complicated export and import rate structure, which while originally applying only to the ports from Boston to Baltimore, inclusive, was later extended to include the Canadian ports, Montreal, St. John and Halifax, in the north, and the most important South Atlantic and Gulf ports to the south. This extension or geographical expansion duly considered the peculiarities of local traffic conditions which necessitated various modifications. The guiding thought was simply to create a rate structure which included all the routes leading to and from the great middle western grain belt and to establish a sound balance of power among the rival railroads. A clear grasp of this rate situation is indispensable to a clear understanding of the whole matter of port competition in the United States. It is therefore worthwhile to give a concise account of its origin and development.¹

Two elementary facts must be clearly borne in mind. First of all, as late as 1881 the export tonnage of grain alone represented as much as 73 per cent. of the total east-bound tonnage carried by the trunk lines to the four great Atlantic ports of Boston, New York, Philadelphia and Baltimore. Secondly, that in those days,

¹ The historical part of the following discussion of the port differential situation follows in general the outline of Chapters VIII and IX of E. J. Clapp's *Railway Traffic*.

each trunk line had its own ocean terminal; the Baltimore & Ohio, Baltimore; the Pennsylvania, Philadelphia; the New York Central and the Erie, New York. This meant that during the period, 1870-1880, railroad competition was identical with port competition. The struggle proved so disastrous that an arbitration commission was appointed to put an end to this cut-throat competition. The decision which was reached in 1882 became the basis of future port competition. Baltimore was given the differential of 3 cents under New York and Philadelphia of 2 cents, and Boston put on a par with New York as to all export trade. On imports, Baltimore and Philadelphia were allowed the following deductions from the New York rate:

CENTS PER 100 POUNDS

	Class						Commodity
	1	2	3	4	5	6	
Baltimore.....	8	8	3	3	3	3	3
Philadelphia	6	6	2	2	2	2	2

When domestic trade became important these export and import rates were applied to east and westbound domestic traffic respectively. The justification for these differentials is based upon the cost and distance principle. The southern ports are nearer to that part of the west which they serve and therefore transportation tends to be cheaper. But another factor was possibly even more important to that extent. Average ocean rates from Philadelphia and Baltimore were found to be higher by 2 and 3 cents, respectively, than via New York and Boston, owing to longer ocean distance and because of poorer

port conditions in the southern cities. New York also offered the advantage of greater frequency of sailings and of direct connections with a larger number of markets. Therefore, practically no through shipments were booked via the southern ports unless the charge for the rail haul was so reduced as to neutralize the handicap of the higher ocean carriage.

In the meantime, New Orleans appeared upon the scene. In the years from 1882 to 1898 three railroads had reached that port and its channel to the sea had been considerably deepened. Furthermore, Norfolk and Newport News claimed a share of the grain export traffic and got it on an even basis with Baltimore, i. e., on a rate basis below New York. Some American grain began to flow via Canadian ports, so railroads serving these ports could not remain outside of the rate structure.

This meant increasing competition for New York, which felt unduly handicapped by this rate structure. In 1898, it appealed to the Interstate Commerce Commission, which, however, let matters remain unchanged. But, in the meantime, the ocean rate situation had changed. Charter rates had become the same for the whole "North Atlantic Range." Only for "berth rates," i.e., parcel lots carried by liners, had New York retained its advantage. On the ground that the grain movements were about evenly divided between tramps and liners, the railroads voluntarily reduced the differentials from 3 cents to 1½ cents for Baltimore, and from 2 cents to 1 cent for Philadelphia. It would have been impossible to abolish the differentials for cargo lots and retain them in full for parcel lots, because, frequently, the method of ocean transportation, whether by liner or

by tramp, is not determined until long after the grain has reached tide-water.

The admission of New Orleans and Montreal into the rate structure, which we just mentioned, took this form. These two ports offered exceedingly low rail rates to the interior on all imports, which they needed badly to balance their heavy exports of cotton and grain respectively. Montreal took a 59-cent import scale, or a first-class differential under New York of 16 cents. New Orleans accepted the Todd and Knott (1907) arbitration which ruled that as to Cincinnati and practically all territory west of and including Louisville, Indianapolis and Chicago, the import rate from New Orleans and other Gulf ports should be less than the New York rates by the following amounts:

CENTS PER 100 POUNDS

	Class						Commodities
	1	2	7	4	1	6	
Differentials	18	18	12	8	6	6	6

These differentials, up to the war, regulated the import traffic via the Gulf. The peculiar feature of the Gulf export situation is that export rates are the same to any Gulf port, from Galveston to Pensacola.

War-time readjustment of railroad rates.—Theoretically much of the rate structure just described is still in force to-day. But the war has brought a number of such far-reaching changes that to-day theory and practice are far apart. In the first place, the railroads being administered as a whole by the Government, the national viewpoint somewhat replaced the local interest of the individual railroads. This, coupled with the fact that the war

taxed the railroad facilities to the breaking point, led to an endeavor to avoid, as far as possible, unnecessary criss-cross movements. The Port Facilities Commission of the United States Shipping Board has investigated the excess rail transportation of Brazilian coffee imported into New Orleans and New York, by tracing the respective imports of the two cities to their final destination and calculating the unnecessary haul in each case. The result of this investigation is given in the chart on page 111.

Two additional factors complicated the situation. There was, in the first place, the wonderful growth of American tonnage which put into the hands of the Government the opportunity to develop new trade routes wherever facilities seemed lacking or trade expansion called for new ones. In an indirect way the establishment of new trade routes was aided by the second factor, the congestion of the North Atlantic ports, New York in particular. The Shipping Board and the Railroad Administration worked hand in hand, the former allocating ships as they were turned out by the Emergency Fleet Corporation, to ports and trade routes, the Railroad Administration revising rates to direct the trade into the new channels.

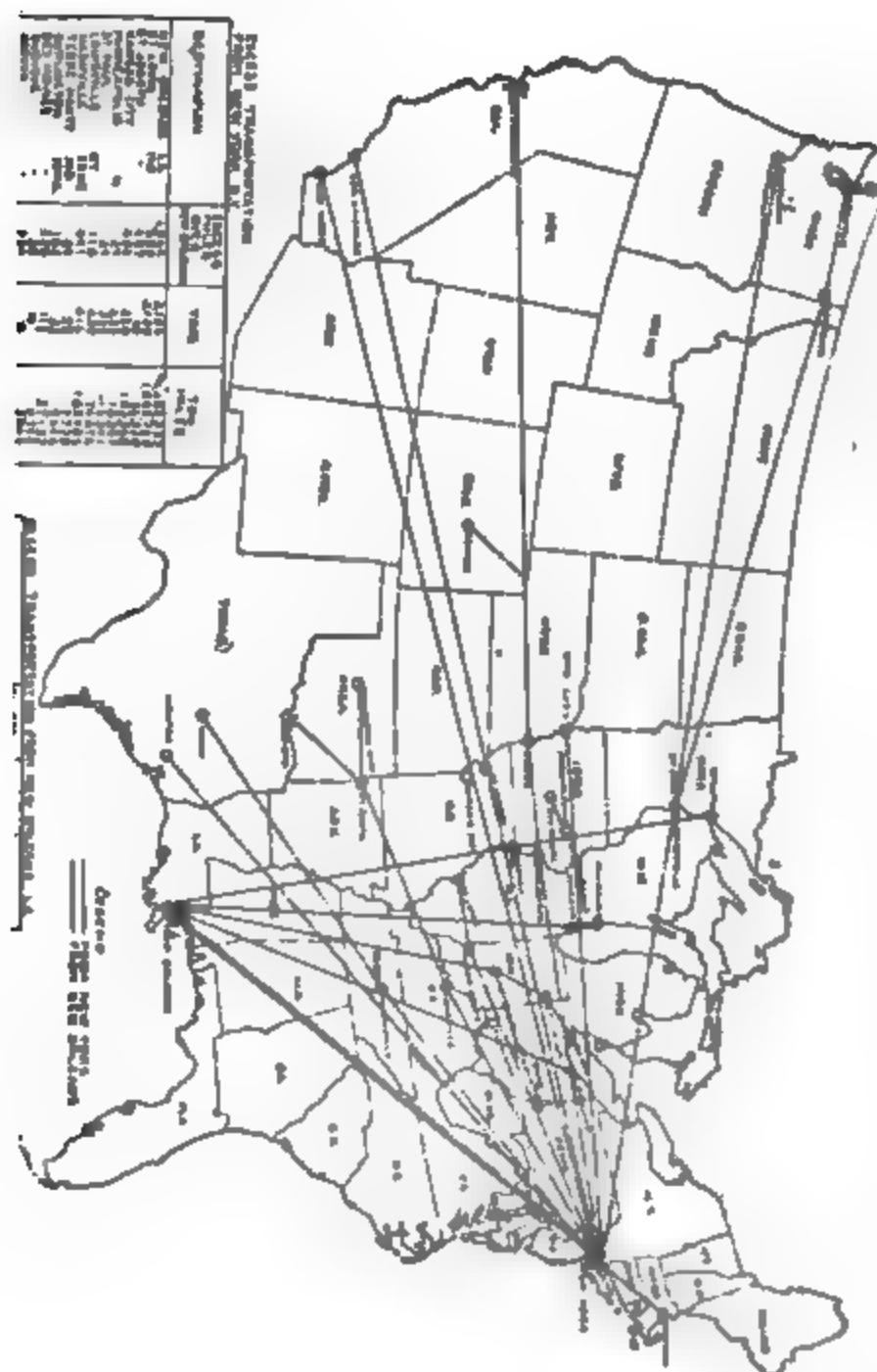
The work of the latter in this respect is summed up as follows in the Annual Report of the Director General of the Railroads. (Division of Traffic, 1919, p. 5.)

"The restoration of more nearly normal commercial conditions, the larger number of American ships available for foreign trade, and the continued congestion at many ports soon demonstrated the necessity of equalizing the rate bases to and from certain territories and ports so as to distribute the movement of the traffic for

THE WORLD'S LEADING PORTS

111

INDICATING INDIRECT AVERAGE ANNUAL RAIL MOVEMENTS, BY NET TONS, OF IMPORTS
OF BRAZILIAN COFFEE FROM UNITED STATES PORTS TO DESTINATION, RESULTING IN
EXCESS TRANSPORTATION TON MILES, FOR PERIOD JANUARY 1, 1916 TO JUNE 30, 1918



the advantage of all interests. Among the changes or revisions made are:

"The revision of both import and export rates via Pacific Coast ports more nearly to equalize the shipping routes via the Atlantic and Gulf ports.

"The publication of revised export rates from points in central territory to the South Atlantic and Gulf Ports better to distribute export traffic.

"The revision of rules covering port and handling charges on the Pacific coast under which steamship lines assume liability for demurrage charges resulting from their failure to take the goods when delivered in time for scheduled sailings."

The revision of low export rates to the Gulf ports is the most important item. It has stirred up a great deal of commotion, the Eastern trunk lines violently protesting and the business interests of the Midwest, Gulf and South Atlantic territory applauding with equal vigor. The situation was further aggravated by several horizontal rate increases. During the war, the United States administration authorized a blanket rate increase of 15 per cent., and later on the Transportation Act of 1920 accorded the railroads a further increase of 33 1/3 per cent. for inter-territorial, and 40 per cent. for intra-territorial traffic. The increases threw the old differential rate system completely out of gear, emphasizing and widening the effects of previous changes. Horizontal rate increases are unscientific, as they do not affect low rates and high rates alike. A 40 per cent. increase on a 50-cent rate adds only 20 cents, but on \$1 rate it adds 40 cents, and in business, absolute amounts and not percentual amounts count. As it is, the rate increases mean an additional stimulus to divert traffic from the trunk lines to the canals serving Gulf and South Atlantic ports. It is

ted by reliable authorities that as the rates stand now, practically no all-rail grain shipments from the middle western territory could go to North Atlantic ports, and only export grain that would reach New York would that moving by the Great Lakes and the New York State Canal. No wonder that we find the trunk lines preparing for a battle royal, by which they hope to bring out a revision of the present rate situation.

The Shipping Board did their share to accelerate the adjustment. Admiral Benson, Chairman of the Board, strongly in favor of a policy of directing exports through the ports which are nearest to the production centres of the articles concerned, and of attracting imports to the ports closest to the territory in which the imported commodities are to be consumed. He announced his desire "to break up the monopoly heretofore held by New York" by allocating tonnage to trade routes leading to and from other ports of the country. The Evening Post¹ (New York) commented upon this plan as follows:

"From the economic standpoint it is perfectly clear that it would be easier on the railroads of the country to have their traffic spread along the Atlantic Coast; equally clear is it that there would be a very substantial saving in time and expense and that it would increase the capacity of the country as a whole for export trade if certain ports of the country could specialize in their equipment, railroad connections, etc., on coal and other bulk commodities, other ports on general merchandise freight, and so on through the line. Beyond any question of a doubt such organization of the railroads and of the ports of the United States for foreign trade would benefit the whole country in general and each individual port in particular, but it would require years, if not generations, to

thoroughly accomplish such reorganization and development without in the meantime doing serious injury to current business. Certainly it would not be accomplished by mere formation of a few regulations by the Shipping Board diverting ships from points where they are needed and can be profitably operated to points where they are not needed and would incur only expense to their owners or operators. As long as New York is the financial and insurance center of the country in foreign as well as domestic commerce and as long as its other facilities maintain their present ratio in relation to similar facilities in other American ports it will continue by force of circumstances to hold its present supremacy (whether or not that supremacy is a monopoly does not affect the matter) in the export and import trade of the United States."

The present rate situation as it affects port competition is the result of measures dictated under the pressure of war emergencies. Its retention is unjustified in these times of peace. The present rates, therefore, should be looked upon as transitory and the near future will disclose what permanent readjustment will be made.

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PART III
THE OCEAN CARRIER



CHAPTER VII

SIZE, SPEED, AND EFFICIENCY

Rapid growth in size of vessel during the nineteenth century.—There are few works of man which illustrate the advance of civilization and the victory over the forces of nature more strikingly than ships: “They are grander things than all the art of towns; their tests are tempests and the sea that drowns. . . . They mark our passage as a race of men.”¹

The ship of to-day is sixty times bigger and many times faster and better than its prototype of George Washington’s time. On the even basis of ton for ton, the shipping of the present is five or six times more efficient than that of the early days of this nation. This is largely the result of the substitution of coal and oil for sails as motive power, and of iron and steel for wood as material of construction. When we compare the leviathans of to-day, with their gross register tonnage of 50,000 tons and more with the 400-ton ships which were the pride of Salem a century ago, we must indeed marvel at the progress of mankind upon the sea.

Economic justification of large size.—The enlargement of ships was rendered profitable by the vast increase in the volume of trade during the last century, which witnessed the transition from intermittent luxury trade to continuous world-wide exchange of bulky necessities. This growth was stimulated by the keen competition existing among rival steamship lines, which only in re-

¹ John Masefield.

cent years came to satisfactory agreements with one another, and was made possible by the development in the art of shipbuilding particularly in regard to the marine engine.

The explanation for this continuous growth in the size of ships is to be found in the fact that increase in size is the most valuable resource of the naval architect, as it is directly conducive to the attainment of his great aims: safety, comfort, speed and economy.

Advantages accruing from large size.—Increase in size gives comfort in the form of more deck space, greater height above water and less disturbances due to wave motion. It assures greater speed because the greater the length of a vessel in proportion to her total weight the smaller becomes the power required to propel a given displacement at a given speed. Finally, under normal conditions, a ship's earning capacities, depending on space and displacement, are increased at a greater ratio than the cost factors, hence the economy of larger vessels. This is true both in the case of increased length and of increased draft. We quote the following concrete example illustrative of this principle. The case chosen is that of a cargo vessel having a speed of 13 knots at sea on a 2000 mile voyage.

"On a length of 400 feet we can construct a vessel weighing 3,700 tons which would carry 4,000 tons of cargo and consume 500 tons of coal. Each 100 tons of cargo, therefore, involves $92\frac{1}{2}$ tons of constructive material and $12\frac{1}{2}$ tons of coal per voyage. A vessel 500 feet in length would weigh 6,750 tons, would carry 8,700 tons of cargo and consume 700 tons of coal. Each 100 tons of cargo in this case requires only $77\frac{1}{2}$ tons of vessel and 8 tons of fuel."¹

¹ See Alexander Gracie, *Twenty Years Progress in Marine Construction*, p. 687 (Smithsonian Institution Report).

refers to the length. The importance of increase is illustrated in the following statement:

Inclusion that unrestricted draft is necessary for transport can be arrived at from first principles. A constructed of a depth sufficient to go to say 40 feet does not cost so very much more than a vessel of a constructed to go to 29 feet draft, whereas the increase of cargo is the difference between the extreme draft vessel and the draft the vessel must have in order to hull, and machinery, and coal, and stores.

Using two ships are constructed, the one of 29 feet and the other of 40, and in each case the draft necessary hull, machinery, etc., before paying cargo can be put feet. In the one case there is only 6 feet of draft for paying cargo whereas in the other case there is 10 feet. The weight of hull for the restricted draft vessel increases much more rapidly than the displacement. The beam is increased in the same ratio as the length, or the stability will be interfered with. Before a great length is reached the dead-weight that can be carried no longer increases as the length of vessel increases, but begins to decrease. Farther, the excessive proportion of breadth to draft of large vessel of restricted draft is bad from the point of resistance and therefore the running costs, which depend on the power of the machinery, are considerably increased.

Working out this principle, Sir John Biles supplied variational and very striking illustrations. He found that if unrestrained the cost of transport steadily decreased in ease of length; thus a vessel 700 feet long, with proportionate draft, could transport goods on a 3,000-mile voyage at speed of 14 knots, 13 per cent cheaper than a smaller vessel 490 feet in length, while further increase in speed in larger vessel would be less costly. He also found that increase in length is uneconomical unless accompanied by increase in draft; thus, with draft restricted to 23 feet 3 inches, the cost of transport per ton for a voyage of 3,000 miles by a vessel 1000 feet in length would be 50 per cent greater than if the vessel had its full proportionate draft; in fact, in-

CHARTERED SHIPPING

... that proportionate increase of draft not increased the cost of transport, but actually in-

~~creased~~ new, but conspicuous.—Because one ... the few very large ships, such as the ... Britannia, Olympic, etc., it is easy to gain a ... notion of the average size of modern ocean-going ships. It can not be emphasized too much that ... the world's ocean-going tonnage consists of ... cases. *Lloyd's Register* for 1919-1920 ... gross tonnage of steam and motor vessels ... was \$M7,407, and the number as 24,386; ... average size for steam and motor vessels ... being more or slightly less than 2,000 tons. ... taking ships in our calculations, the aver- ... age was less than 1,700 tons.

... picture is gained from the following ... data from the same source:

NUMBER OF SHIPS OWNED BY PRINCIPAL MARI- TIME NATIONS ACCORDING TO CERTAIN CLASSES OF GROSS TONNAGE

	Number	Tonnage	Number
IV	4,248	5,000 & under	6,000 1,213
IV	3,259	6,000 "	" 8,000 1,174
IV	2,304	8,000 "	" 10,000 289
IV	1,877	10,000 "	" 15,000 185
IV	1,574	15,000 "	" 20,000 31
IV	1,571	20,000 "	" 25,000 13
IV	1,575	25,000 and above	9
IV	1,554		

... above it must be borne in mind that ... tonnage is largely a heritage dating back

many years. A better idea of the development of ship size is gained from figures which register annual construction.

For this purpose we reproduce a table compiled by the United States Shipping Board (Port and Harbor Facilities Commission), which shows the number of steam and sailing vessels, by classes of tonnage (500 tons gross and over) built during each quinquennial period, from 1879 to 1919, also indicating, in per cent, the relative importance of each group.

Quintennium	500 to 599		600 to 699		700 to 799		800 to 899		900 to 999		1,000 to 1,499		1,500 to 1,999		2,000 and over	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1879-1883	15	1.5	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0
1884-1888	15	1.5	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0
1889-1893	15	1.5	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0
1894-1898	15	1.5	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0
1899-1903	15	1.5	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0
1904-1908	15	1.5	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0
1909-1913	15	1.5	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0
1914-1918	15	1.5	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0
1919	15	1.5	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0	10	1.0

To supplement these figures the following data pertaining to earlier periods might be of interest for the sake of comparison:

1769: 389 vessels of an aggregate tonnage of 20,000 were built giving an average of less than 52 tons.

1800: A 300-ton vessel was considered very large.

1825: 400 tons represented the maximum of vessels in the East Indian trade.

1840: Double decked ships of 1,000 tons sailed in the North Atlantic trade.

1850-1860: Many 1,500-ton ships were afloat; the largest vessel measured approximately 2,500 tons.

Large vessels represent highest achievement.—Although all the ships of more than 15,000 tons built during the twenty years from 1899 to 1918 (before that time no such sizes were reached) number only fifty-six, and although their production during none of the quinquennial periods given reached 1 per cent of the total ship production in number, they represent the highest achievements in naval architecture, combining in themselves all the advances made in that art and industry, and embodying so much national pride in their creation that no book on world shipping can be complete without devoting some space to their history and construction.

The following is a list of six steamers, each of which held the world's record for size during the quinquennial period during which it was built.

Name of Vessel	Period when Constructed	Gross Tonnage	Length feet	Width feet	Deep Load Draft feet
Campania	1889-93	12,884	601.0	65.2	29.0
Cymric	1894-98	13,370	585.5	64.3	31.0
Cedric	1899-03	21,040	680.9	75.3	36.9
Mauretania ..	1904-08	32,508	790.0	88.0	38.
Imperator	1909-13	51,969	882.9	98.3	37.0
Bismarck	1914-18	56,000	912.0	100.	41.3

In thirty years the gross tonnage grew more than fourfold. It should be noticed that all of these ships—with the exception of the last named, which though launched just before the war is still awaiting its completion, ply on the North Atlantic route, where alone such large ships are warranted by the traffic requirements.

Limitations upon further growth of steamers.—There has been much discussion of the wisdom of going to such extremes in building large ships. Some people view the matter purely in the light of international rivalry or vainglorious efforts on the part of shipowners to get the advertisement which goes with the title to the largest ship afloat. There are no ships of excessive size being planned at present, if we discount the rumor of 1,000 ft. steamers to be built in this country to wrest the blue ribbon of the ocean from the Mauretania simultaneously depriving the Leviathan of the glory of being the biggest ship afloat. We are passing through an era of retrenchment and moderation. The White Star Line has abandoned the plan of building the Homeric of 38,000 tons gross and has substituted a 16,000-ton boat to be known as the Doric. The motto of the Cunard Line also is "smaller and safer."

The question of the size of ships cannot be properly viewed from the shipbuilder's viewpoint alone. In the first place, the matter of insurance becomes increasingly difficult as the size of the ship grows. Secondly, the economies which may be achieved in the operation of a vessel by a relative reduction of the "tare," i. e., the weight of the carrier compared to the weight of the cargo carried, may result in other expenditures which should be deducted from the purely shipping economies, to measure their real worth.

Large vessels necessitate big terminal outlay.—These expenditures comprise, chiefly, the money spent for harbor improvements, deepening of channels, dredging, pier-extension, etc. Some harbors are formed by nature so that they can welcome the deep-draft vessels with-

out great outlay; but more ports, if they wish to keep in the race for international trade, must provide artificial facilities. Improvements are often progressively costly; the work of dredging and keeping clear each extra foot of depth of the channel becomes increasingly expensive. Somebody has to foot the bill; whether the expense is shown directly in the form of harbor dues imposed on entering ships or whether it is absorbed by inclusion into the general tax accounts of a country, is of no importance. In the end the trade of the country pays.

Large size handicaps vessel operation.—Another factor has to be considered: the bigger the ship the fewer the ports open to it, in spite of all dredging and other improvements. That means increased specialization and reduced flexibility for the ship and frequently necessitates heavy transshipments of cargo from the few favored ports to the large number of smaller ones. That also involves expense and a loss of time.

Therefore, to sum up, we may quote A. J. Sargent:¹

"The tendency towards great size, the narrow ship-builder's point of view, without reference to other elements in the cost of transport, may, like the increase in speed, result in a higher total delivery-cost for the goods. Speed has its advantages, which must be paid for, but even these advantages can be bought at too high a rate. Apart from possibilities of economical working, size is of no great advantage, except perhaps for advertisement or national boasting; it is a luxury, and the next generation is not likely to have too much capital to spare for the provision of luxuries such as steamers of forty-foot draught and upwards. Not many

¹ *The Treasures of the Empire*, pp. 42, 43.

port authorities are likely to be in a position to endorse the statement of the engineer of one of the great ports of the Southern Hemisphere: 'We intend to be an up-to-date port, whether it pays or not!'"

Increase in speed costly.—Hand in hand with the increase in size there went an increase in speed, though this was less phenomenal. The two factors are subject to opposite laws; size is governed by the law of increasing return, in the sense that, other things being equal, each unit added contributes to the earning capacity more than it does to the initial cost. Increase in speed, on the other hand, is bought at an increasing cost per unit. Thus a given steamer, 680 feet in length, crossing the Atlantic at a speed of 16 knots an hour, would consume 2,000 tons of coal during the voyage and carry 12,000 tons of cargo. To raise the speed to 22 knots would involve a threefold sacrifice. First, the coal consumption would rise to 3,500 tons, the cargo carried would be reduced to one-fourth, or 3,000 tons, and the initial cost would be raised by 25 per cent.¹

A comparison of the Imperator with the Bismarck will show a similar result. The former ship was built for comfort, therefore the ocean speed was limited to $22\frac{1}{2}$ knots, which is obtained by turbines of 62,000 horse power. The Bismarck, which is less than 10 per cent larger, to gain a speed increase over the Imperator of but 3 knots an hour, was planned with a machinery to develop 90,000 horse power, or almost 50 per cent more than the smaller steamer. The high cost of speed is furthermore illustrated by the subsidies granted by many governments for the carriage of mails at a stipulated

¹ Alexander Gracie, op. cit., p. 690.

out to the liner. In the early days of steamship travel passenger vessels. It was said a passenger liner could not be added, the fast boat was secure of full bookings, usually paying the extra passenger business on the speed contests, one company country competing for the much coveted blue ribbon of

"The Blue Ribbon of the Ocean."—The contest began when the Sirius and the Great Western crossed the Atlantic in seventeen and a half hours, the former leaving Liverpool, the latter Bristol. Then followed the Cunard and the White Star lines liners and the Cunard soon had undisputed control of the ocean. Their American rival in 1850, the New York Central Line came to the fore again. The record was held by the Cunard until 1897, Germany won the race for the next ten years.

The record is given in the table shown on

"The Blue Ribbon of the Ocean."—The cost of speed is best illustrated by the Great Western consumed 1,000 tons of coal against the 1,000 of the Mauretania. The enormous size of the latter, however, as one might expect. Reduced the construction of the hull and this increased the efficiency of

TABLE SHOWING THE EVOLUTION OF THE ATLANTIC LINER¹

NAME	Gross Tonnage	Length (feet)	Horse Power	Speed Knots (per hour)	Fuel Consumption Tons (per Day)	Propulsion	Engines	Material	Date
Royal William		176	180	7 5		Paddle..	Steam.	Wood.	1823
Sirna	700	208	320	7 5		"	"	"	1838
Great Western	1,340	236	440	9	28	"	"	"	1839
Britannia	1,156	207	740	8 5		"	"	"	1840
Great Britain	3,270	302 1/4	1,000		35-50	Screw	"	Iron	1843
America	1,825	251	1,400	10 25	60	Paddle	"	Wood.	1848
Baltic	3,000	282	800			"	"	"	1850
Ana	2,226	266	2,400	12 5		"	"	"	1850
Perseus	3,300	376	3,600	13 2	150	"	"	Iron	1858
Great Eastern	18,914	680	6,800	13 8	350	Screw and Paddle	"	"	1858
Java	2,007	337	2,650	14		Screw	Compound	"	1865
Egypt	2,950	358	3,100	14 4	90	"	"	"	1867
Oceanic	3,808	420	3,000	14 75		"	"	"	1871
Britannic	5,004	455	5,500	15	75	"	"	"	1874
City of Berlin	5,490	488 1/2	4,790	16	120	"	"	"	1875
Savia	7,201	515	9,900	16 7	200	"	"	Steel..	1881
Umbria	8,127	500	14,500	19 5		"	"	"	1894
City of Paris	10,600	527 1/2	18,000	19	426	Twin Screws	Triple Expansion	"	1895
Titanic	40,664	583 1/4	16,000	21		"	"	"	1899
Campania	12,500	600	26,000	21	464	"	"	"	1903
Kaiser Wilhelm II	19,361	678	45,000	21 5	700	"	Quadruple Expansion	"	1901
Celtic	20,904	690 1/4				"	"	"	1901
Mauritania	31,936	762	70,000	25	1,000	Quadruple Screws	Turbines..	"	1907
Olympic	46,000	882 1/4	50,000	22		Triple Screws	"	"	1910
Aquitania	47,000	901	60,000	23		Quadruple Screws	"	"	1914
Imperator	52,000	911	61,000	22	1,160	"	"	"	1913
Leviathan	54,283	907 1/4		25	1,160	"	"	"	1916
Bismarck	56,000	912	90,000	26	1,200	"	"	"	....

each ton of coal burned. The same amount of coal propels to-day approximately eight times as much displacement tonnage as was the case seventy years ago. Sir James McKechnie, at a recent launching, remarked that while in 1875 seventeen pounds of coal were consumed in conveying 100 tons of cargo one mile on ocean

¹ Adapted from Kirkaldy, *British Shipping* (Appendix).

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weights today four pounds accomplish the same result.¹ The speedier liner foregoes much or all of the direct mechanical advantages gained by this improvement, but not so the tramp, the purely cargo carrying vessel. The speed of the average tramp has remained practically constant at 11 knots, for twenty or thirty years. But if we compare two typical tramp vessels built twenty years apart we note that the tramp owner reaped the benefit of improvements in greater earnings:

Year	Deadweight Ton	Indicated Horse-power	Coal Con- sumed Daily	Knots per hr.
1860	6,400	1,400	24 tons	11
1880	9,000	2,300	32 "	11

Thus we find more deadweight is carried and 64 per cent more power developed, but only 33 per cent has been added to the coal account.

Steamship efficiency.—Size and speed are vital factors in steamship efficiency but other elements contribute to the result. The transition from wood to iron and later to steel was of vital importance. Every improvement in the quality of material, every advance in the better distribution of these materials is a step forward toward greater efficiency. The introduction of iron about the year 1820, and about 1870, were milestones of progress in the development of steam navigation. An interesting estimate of the increasing carrying capacity was made by Sir Norman Holbrook of the Liverpool Steamship Owners' Association in a valuable report published in 1909. He as-

"A steam vessel (iron or steel) built prior to 1888 carries.....2 times its net tonnage.

A steam vessel (steel) built between 1888 and 1898 carries.... $2\frac{1}{4}$ times its net tonnage.

A steam vessel (steel) built between 1898 and 1906 carries.... $2\frac{1}{2}$ times its net tonnage.

A steam vessel (steel) built between 1906 and 1908 carries....2.7 its net tonnage.

To the increased speed and greater carrying capacity per unit of cubical contents must be added the effect of improvements in loading and unloading. Rapid loading and discharge of cargo are of vital importance to all vessels; to the expensive liner because of the amount of interest and depreciation charged against it every hour of the day, to the cheaper tramp because of the relatively larger amount of cargo carried. Cargo can be handled the more rapidly the less it has to be moved horizontally along the holds and between the decks before coming under the hatchways. The tendency, therefore, is towards increased hatches, so much so that some of the modern tramps have almost continuous hatches, in breadth nearly equal to half the vessel's beam. Hold pillars, which interfered with rapid cargo handling, have almost disappeared. Also the winches have been greatly improved so as to assure greater dispatch.

Port delays neutralize gains in efficiency.—But all the benefits to be derived from these improvements in ship construction,—better marine engines, novel loading and unloading devices,—may be annulled by neutralizing forces. To Sir Frederick Lewis, Chairman of Furness, Withy & Co., is attributed the interesting statement that despite the increase in the registered tonnage during

the five years from 1914 to 1919 by 6 per cent, the cargo moving capacity of the world's merchant marine had been reduced by one-third. The explanation given for this anomalous situation is that strikes, inadequate port facilities and shortened working hours of longshoremen have so crippled the efficiency of the world's merchant marine that the time of the ships at sea has fallen from 75 per cent before the war to 48 per cent in 1919. This means that on the average, more than half of the world's tonnage is held in port, moored to piers, waiting to be loaded or to discharge cargo more often than actually loading or unloading. The captain of one of the largest ships under the American flag was reported as saying that the discharging and loading of his cargo took about as many days as hours in pre-war times. The American International Corporation kept a log of the performances of the first 37 ships delivered to the Shipping Board and allocated by that Board to various steamship companies:

"A faithful record showed that on eighty voyages to one hundred different ports the thirty-seven vessels steamed 427,814 miles, carrying 600,000 tons of cargo. Although the ships are equipped with the most improved machinery for expediting loading and unloading, the log details that the fleet was at sea only 48 per cent of the time. Only five of the ships were detained for any considerable period of time for repairs. The log of the ships for August and September cites some of the delays with which shipping is having to contend. It follows:

Seven ships at Liverpool unable to move on account of strikes and congestion. Held for period of days—40, 43, 45, 19, 19, 55, and 22.

Three ships in Havre, 25, 30, and 27 days—strike.

One ship in London 29 days—congestion.

One ship in Cardiff, 28 days—coal strike.

One ship in New York, 22 days—strike.

Two ships in Marseilles 29 and 27 days—congestion.”¹

The Port Facilities Commission of the United States Shipping Board in a very valuable report on “Economies effected by the more rapid turn-around of vessels in United States Ports” (prepared by T. W. Cleworth) arrives at the following interesting conclusions. The figures refer to an average size, steel, coal-burning vessel of 6,450 deadweight tons, which handles both cargo and passengers. The average daily expense in port is calculated at almost \$4,000, so that a reduction of the stay in port from 15 to 5 days means a saving of \$40,000, or more than 5 per cent of the capitalization of the vessel, which is put at less than \$800,000.

The following table gives the additional steaming radius gained by shorter turn-around.

Days in Port	Additional Steaming Distance
14	264
13	528
12	792
11	1,056
10	1,320
9	1,584
8	1,848
7	2,172
6	2,376

The question of the commercial efficiency of a cargo carrier thus practically resolves itself into a ratio of the time spent at sea, when the vessel is performing useful work and earning money, to the time spent in port when loading or discharging, or idly waiting for its turn.

¹ See *Annalist*, Nov. 3, 1919, p. 349.

Sailors and Sailors. (1902).

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World Report. (London, 1918).

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cerpts from Part I of the Hearings on

the Organization of the United States Shipping Board.

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Speedy turn-around of vessels in

ports. Prepared by T. W. Cleworth. (1919.)

CHAPTER VIII

MOTIVE POWER

The romance of the sailing vessel.—On the basis of motive power ships may be divided into many classes, provided we include ships of all sizes and all ages. The muscular strength of man and beast, used to this day to move canal boats in many parts of the world, the power of river currents, which carried the primitive Coracle,¹ and other forces must be mentioned. But in modern ocean transportation we rely on three forces only: wind, steam, and gas explosion. In each case we have a great variety of systems and devices by which these forces are harnessed and utilized.

Although the history of the sailing ship reaches far back into dim antiquity, the greatest progress in its development was made during the latter part of the nineteenth century. Strange to say, the sailing ship reached the height of its perfection at the very time when the demonstrated advantages of the steamer pronounced the doom of that picturesque and romantic type.

The present generation is so accustomed to look upon the steamer as the only ocean carrier, that it is hard to believe that but thirty years ago the sailing vessel not only outnumbered the steamer but provided as well the larger tonnage. We note from the table given on page 134

¹ A primitive vessel used on the Severn, made of skins sewed over wooden ribs; cf. in modern technology, skin of a steel ship, seams of wooden or steel ships, etc.

ABBOT, W. J. *America.*
ANNIN, R. E. *Occidental
Operation.* Chaps. V
BANK OF THE MANHATTAN
New York. (1915).
DOMINIONS' ROYAL COURT
GRACIE, ALEXANDER. " "
 From the Smith.
HOUGH, B. O. *Oil.*
JOHNSON AND HARRIS
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 *Romance from the
Sea.*
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RIEGEL, R. *Merchandise*
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Boston. (1915).
TALBOT, F. A. *Oil.*
UNITED STATES. "
 *Water in the
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Coal Industry.* (July 24, 1915).
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Economics in the
United States.*

strength of its evolution,
and its decline until after
the Civil War had the advantage
of the sailing ship and as late as 1896

OVER 100 TONS

(in tons)	Steam	Sail Tonnage per cent of total
-	..	100.
-	20	100.
-	111	98.5
-	368	96.
-	864	93.
-	1,710	89.
-	3,040	80.9
-	5,880	71.
-	8,295	52.5
-	13,857	32.5
-	22,046	17.3
-	27,019	13.2

still the more pronounced
advantage of greater speed and
the carrying capacity of the steamer is esti-
mated as that of the sailing

ship established October 13, 1920,
is over 100 tons and upwards, re-
quires 1.3 per cent of the coal as fuel; 16.3 per
cent for oil burners; 1.7 use oil in
the boiler and 0 per cent have sail

Sail-tonnage under American flag.—Shipping under the American flag still contains a larger proportion of sail-tonnage than is the case of the merchant fleets of most countries. This is due to the fact that the American coastwise trade is restricted by law to American vessels only. The elimination of competition is responsible for the fact that a type of vessel, which in other fields of ocean shipping cannot withstand the modern steamer, still retains a certain portion of its former exclusive domain. But in the United States also the sailing vessel is losing ground, the total steam tonnage having grown from 1,837,200 tons in 1890 to 10,313,300 in 1919, while the corresponding sail tonnage decreased from 2,501,300 in 1890 to 2,465,500 in 1919.

Though the sailing ship is losing ground rapidly, it is as yet no “quantité négligeable” over which one may pass in silence. The least one should know about this fascinating craft are the general principles of classification by which the innumerable types, so bewildering to the landsman, are distinguished, and the main features of the evolution which led to the adoption of these types.

Classification of sailing craft.—There are three main criteria of distinction. One is the method of rigging the sails to the masts, the second the number of masts, and the third the number of yards on each mast. If the yards or beams to which the sails are attached are horizontally fastened at their center to the masts so that the two halves extend equal distances on each side, the vessel is called “square-rigged.” In the “fore-and-aft rig,” however, the yardarms touch the mast with one end, thus extending full length from the mast. If we symbolize a square-rigged mast by \perp and a fore-and-aft by

Classification of sailing

OF SAILING VESSEL

Fore-and-aft rigged Masts.



Classification by combination
of masts and yards on the

same mast and by other minor changes. The early American schooner represented such a compromise between the two methods of rigging.

Evolution of the sailing vessel.—If we view these different classes historically, the development is naturally from the simple to the complex, from the small type to the larger one, and since 1850, from the square-rigged to the fore-and-aft rigged. Thus different types prevailed at different times, changes being brought about by new requirements.

The hull of the sailing vessel also underwent a considerable change. The high cabin structure above the deck aft, and the high forecastles which characterized the caravel type of the Columbus days had disappeared in the early part of the seventeenth century. For centuries hull construction followed the old theory that it did not matter how roughly a vessel entered the water as long as she left it smoothly behind her. The Baltimore clipper with her full round bows, practically flat forward floor and narrow stern typified this long-cherished idea. This old-fashioned design was boldly attacked in 1841 by a young New York draftsman, John Willis Griffiths, who "proposed a model of a knifelike, concave entrance, melting into an easy run to the midship section, where instead of forward, he located the extreme breadth of beams. Thence this fullness or breadth melted again into the after-end in lines almost as fine as those forward. In place of the codfish underbody he gave his innovation a dead rise amidships that marked him at once in the estimation of the shipbuilding fraternity as hardly less than a lunatic. A vessel of that sharpness

...le a pier, let alone

United States, temporarily. "Rainbow" was the first clipper ship to fly the stars and stripes." With that, a new era in shipbuilding was born. The United States, temporarily. "Rainbow" was the first clipper ship to fly the stars and stripes."

... for speed while the sailing vessel had given up. Speed became vital because of the steamer loomed large especially in the North Atlantic where it was vital in the long-East, where the younger generation had to outdo its foreign rivals. It created in California a new market. Later on, the Crimean War and in Australia gave new markets to the owners of clipper ships. This was to last but a decade and the output was reached by 1855 and remained unrivalled until the opening of the Suez Canal in 1869. That long neglected market had increased to 583,450 gross tons of shipping.

...the name in the development. The schism, the
beginning of Type 52.

most distinctive American vessel type, survived because of greater economy and efficiency. The sailing vessels built in the United States have almost all been schooner rigged. With the use of steel hulls the sailing vessels reached a maximum development in the Thomas W. Lawson, a seven-masted schooner. Compared with the earlier types this was a monster vessel. "It had seven masts and measured 5,218 tons gross and 4,914 tons net. It could carry from 7,000 to 8,000 tons of cargo. The length over all was 375 ft., the beam 50 ft., the draft loaded 26 ft. The masts were 195 ft. high, the first 135 ft. being steel and the top 60 ft. wood. The maximum possible spread of sail was 43,000 square ft.,¹ an area about equal to an acre. Dummy engines were employed to handle the sails, to work the rudder, to load and unload the cargo, and for numerous other purposes. The vessel was as up-to-date in its appointments as is the most modern freight steamer, about the only difference between the two vessels being in the motive power employed."²

Sailing vessel and steamship compared.—The sailing ship possesses advantages in its free motive power and its relatively small crew requirements. But these are more than offset by slow speed and uncertainty as to the time of delivery of the cargo. These two qualities of speed and regularity have become more and more important. The international exchange of goods is based on contracts made before the departure of the vessel.

¹ The German sailing craft "Preussen" had a maximum possible spread of 60,000 square feet according to J. Russell Smith, *The Ocean Carrier*.

² Johnson and Huebner, *Principles of Ocean Transportation*, p. 13

Though the sailing vessel is being outclassed steadily by its more efficient rival, it is not to be assumed that it will vanish altogether. In two distinct services, its usefulness will probably continue; in the coasting trade, which for some districts and some products is irregular and can not easily be organized into steamer service, and in the skirmish work of international trade, which must precede the establishment of new steamer connections. But the long-cherished theory that the sailing vessel will remain the exclusive carrier of certain classes of bulky commodities on long voyages, such as the nitrate cargo from Chile to Europe, will have to be dismissed in the face of the recent development in these trades.

The future of the sailer.—The future life of the sailing vessel will be prolonged by the use of auxiliary motors. The Literary Digest for April 10, 1920, published an interesting article which discussed this important subject in a novel and surprising manner. We give the essence of the article by quoting a few paragraphs:

"The sailing ship is to have a new lease of life. She held the seas until the late 70's, in competition with the ocean steamer, invented more than half a century earlier. Then came the day of lowered prices of fuel and machinery, and the sail began to vanish from the oceans. She has nearly gone, but now she is coming back. Steam is expensive; fuel is high; but the winds of heaven blow as of old. C. O. Liljegren, of Goteborg, Sweden, who makes this prediction in *The Pacific Marine Review* (San Francisco), tells us, however, that our present type of auxiliary sailing ship is not a success. She needs more power and more sails. He sketches what he believes will prove to be the commercial carrier of the near future, which he names the "motor clipper." She will be half as fast again as the old clipper-ship and will carry twice as much;

while, in comparison with our present sailing-vessels, she will be thrice as fast and carry twenty-five per cent more. Her gross revenue should be no less than five times as great.

"The reader may wonder why we should bother about the sailing ship when steamers and motor-ships are plentiful and more efficient than ever? Because, Mr. Liljegren tells us, coal and fuel are needed by industry, by land transportation, and by passenger-ships, and because statistics show that the day of the wind-driven ship is coming again. He explains:

"The profit derived from a given ship is dependent on two widely different fundamental conditions: the size, form and efficiency of the ship with its motor and propeller, and the general price-level. Part of the first condition has been indicated herein; it is the sphere where the skill of the designer and builder of the ship is paramount. But in the general price level, or state of the market, the action of man is practically excluded, at least as regards the individual. Only the concerted action of nations, as in great wars, has any effect on the price-level.

"Now the general question—wind-driven versus machine-driven ships—is clearly decided by the price of fuel and machinery. If coal and machinery were cheap enough, no sailing ship could exist; on the other hand, high price-level means high cost of fuel and machinery. At a certain point, machine-driven ships must be operated at a loss and laid up, unless freight-rates rise too. And just here is the chance of the sailing ship—of the right kind."

Improvements in steamship construction.—The rapidity with which the steamship has conquered the field is largely due to the continuous process of perfection going on in the construction of the hull as well as of the marine engine. The former owes its development largely to the scientific study of the strength problem by means of the "girder theory," and to the labors of the classification societies which have shown how to combine strength with lightness. When the experimental tank method of research was put forward we obtained a definite means

of designing form and propellers, thus assuring a minimum waste of power and maximum useful application of the same.

Evolution of the marine engine.—As to the marine engine, it was mentioned that the energy obtained from each pound of coal burned has been multiplied within a few decades. The story of this achievement is worth recounting briefly. Up to 1854, which year marks the successful introduction of the compound engine, the progress made was confined largely to such improvements which would assure higher steam pressure and to modifications necessitated by the transition from paddle wheel to screw propulsion, around 1840.

In 1881 the introduction of the triple expansion type of engine meant another step forward. Its particular variation, known as the three-crank design—proved so successful that it has survived unchanged in all essentials to this day. Compared with this advance the adoption of the quadruple expansion engine since 1894 is of minor importance. On account of its greater running smoothness the quadruple engine has now superseded the triple expansion type for ships trading on long voyages and more especially for passenger ships. In the case of cargo carriers, the triple expansion engine is still the rule.

The coming of the turbine.—The difficulties of construction and management of very large units of reciprocating engines, together with lessened prospects of further improvement in steam consumption led to the adoption of the steam turbine. Two types have been most prominent in marine construction: the de Laval turbine of Swedish origin, and the English Parsons

type. The former was invented in 1883, the latter in 1884. The turbine entered the Atlantic lists in 1905 and was firmly established by the phenomenal success of the Lusitania and Mauretania in 1907. A further improvement was accomplished in the next year by the combined use of the reciprocating steam engine and the turbine, which retained the low speed of revolution of the reciprocating engine, with its accompanying favorable propeller efficiency, while at the same time effectively utilizing the expansion of the steam and the condenser pressure. In describing the machinery of the Britannic, the huge White Star liner lost during the war, its company states: "The result (of using the two types together) is very much higher economy than is possible with the reciprocating engine only."

To increase the steam efficiency in turbines, the same principle that marked the evolution of the reciprocating engine was applied; namely, the compounding of several turbines together in such a way that the steam passes from one to the other. Several ships with a three series type have been put into service.

Electricity's part in ship propulsion.—The usefulness of the steam turbine for marine propulsion has been greatly increased by the introduction of electric, hydraulic and gear-wheel transmission. The outstanding difficulty in applying the turbine to ship propulsion has been that, while high speed rotation is necessary to obtain the maximum turbine efficiency, the propellers are most efficient at a very much lower speed. The transmission represents the bridge between the high speed turbine and the slow-running propeller. The progress

of the geared turbine ship is demonstrated by the following figures:

Ships equipped with geared turbines, classed by Lloyds:

1916-1917.....	23 new vessels of	153,805 tons.
1917-1918.....	72 new vessels of	367,960 tons.
1918-1919.....	183 new vessels of	1,051,302 tons.

While the electric transmission¹ is used on one or two of the largest units of the United States battle fleet, there are only four commercial vessels equipped with a turbo-electric plant, according to the latest Lloyds' Register, the largest of which is the Wulsty Castle of 3,566 tons capable of carrying 6,000 tons of cargo. In October 1920, the steamship Eclipse, the first American electrically driven general cargo carrier was completed and delivered to the Shipping Board for charter to the American Line. She is of almost 12,000 dead weight tons, 440 feet long and has a beam of 56 feet. The old Powhatan, now the Cuba, has the honor of being the first electrically driven passenger liner. She is in the service of the Coast Steamship Company. She makes about 17½ knots, running between Jacksonville and Havana.

The motor ship.—Before the turbine has reached the full limit of its potentialities, a new type of marine propulsion is gaining in importance with almost incredible rapidity, i. e., the internal combustion engine, especially that of the Diesel type:

"This type of engine was invented by Dr. Rudolf Diesel, a Bavarian engineer. The difference between an automobile engine

¹ See W. L. R. Emmet, "The Electric Propulsion of Ships," in *The Electric Ship*, General Electric Company, January, 1920.

and a Diesel engine is, generally, that all the fuel in an automobile engine is burned at once, while in a Diesel engine it is burned gradually, and so gives power more like the steam engine. Air is compressed in Diesel cylinders under great pressure, and then the fuel, consisting of crude petroleum or other heavy oils, is forced into the compressed air by greater outside pressure. This raises the temperature for the air in the cylinder and turns the oil into a gas."¹

The fuel used by Dieseled ships is heavy oil. But oil can also be used and is increasingly being used in steamers, both in connection with the turbine and reciprocating engines. The application of the internal combustion engine to marine propulsion is no new development, small engines for the purpose having been constructed thirty years ago.

Especially since 1910, good progress has been made, and the following table of typical vessels shows the advance in the size of motor ships:

TYPICAL MOTOR SHIPS CONSTRUCTED DURING 1910-1918

Vessel	Year	Tons	Screws	Cylinders
Vulcanus	1910	1,179	single	6
Selandia	1912	4,950	twin	16
Siam	1913	5,296	"	16
Fonia	1914	5,219	"	12
Panama	1915	5,239	"	12
Glenamoy	1916	7,269	"	12
Glenary	1917	5,075	"	12
Glenapp	1918	7,314	"	16

There are two reasons why the development of the motor ship is at present very rapid, particularly in Europe. In the first place, the apparent success of such lines as the Asiatic Company, the Glen Line and the North

¹ See Edward Hurley, *When Coal Oil Johnny Goes to Sea*, p.

Star Company, which may be considered pioneers in the field, is attracting the attention of shipowners and invites emulation. Secondly, the increasing cost of coal, particularly in European ports, and the world-wide labor unrest, which causes delay in bunkering and unfavorably affects the operation of steamers, in general strongly emphasize the advantages of oil. *Motorship*, in a recent issue, reported on good authority that there are approximately 130 seagoing motor ships, aggregating upward of 800,000 deadweight tons, now being built in Europe. Early 1921 reports to *Lloyd's Register* of shipping show that 454,000 gross tons of motorships are being built in the world at present. During 1920 there were launched in the world 190,000 gross tons of vessels fitted with internal combustion engines. Most of these vessels are of the larger liner class. Perhaps the most remarkable feature of the new development is the whole-hearted way in which Great Britain has taken up the construction of this new type of vessel. Until recently the Scandinavian countries, stimulated by their well-known lack of coal, led in this new phase of marine construction. But now we read that not only has the great Belfast ship-building firm of Harland and Wolf opened a new yard on the Clyde, designed for motor ships to the exclusion of others, but also that such firms as the Sir W. G. Armstrong and Whitworth Company of Newcastle, the Vickers Petters Ltd. of Ipswich, and many others, are building motor ships. There are about twenty Diesel engine ships building in Great Britain, mostly of 10,000 tons dead-weight, but including four 13,000 ton ships for the Glen Line.

The British Admiralty likewise seems fully aware of the possibilities of the Diesel engine. The late Lord Fisher, in a

etter to the *Times*, September 1919, wrote: "Half the navy wants scrapping and the other half will be equally useless in a very few years, because of the internal combustion engine and oil," and a little further on he said: "The hearts of the Admiralty should be filled with the internal combustion engine." It is interesting to compare this recent statement with the following words of another great English naval authority, Mr. Winston Churchill: "Coal will continue to be the main basis of motive power in the line of battle for the present." And that was written fifteen years ago.

American experience with Diesel-driven ships.—As far as this country is concerned, the adoption of the new engine during the war was considered inadvisable in view of the lack of workmen and engineers experienced in the building of such an intricate mechanism as the latest marine types of Diesel engines. Also the problem of finding the necessary number of skilled engineers capable of operating them was a handicap. However, since then a change has been brought about. The Bethlehem Steel Corporation has developed a new type of marine Diesel engine especially adapted to the peculiarities of the American situation. The following statement of Charles M. Schwab made in the *New York Times* of August 28, 1920, speaks for itself:

"It is a great pleasure for me to announce that the Bethlehem Steel Corporation and the Bethlehem Shipbuilding Corporation, Ltd., have perfected a new two-cycle fuel-saving marine Diesel engine especially designed for American operating conditions and adapted to land use as well as cargo vessels of any size. In the science and practice of marine engineering this new engine represents a far greater advance over the oil-burning steamship than the latter is

over the coal-fired steamship. It is also regarded as a significant triumph for American engineering skill in a field hitherto dominated entirely by Europeans.

"The development of the new Bethlehem fuel-saving Diesel engine represents two distinctive phases of advance in marine engineering.

"1. For the first time an internal combustion heavy engine for either marine or land uses has been perfected which is not only designed and built by Americans but built especially for Americans and is adapted to American operating conditions.

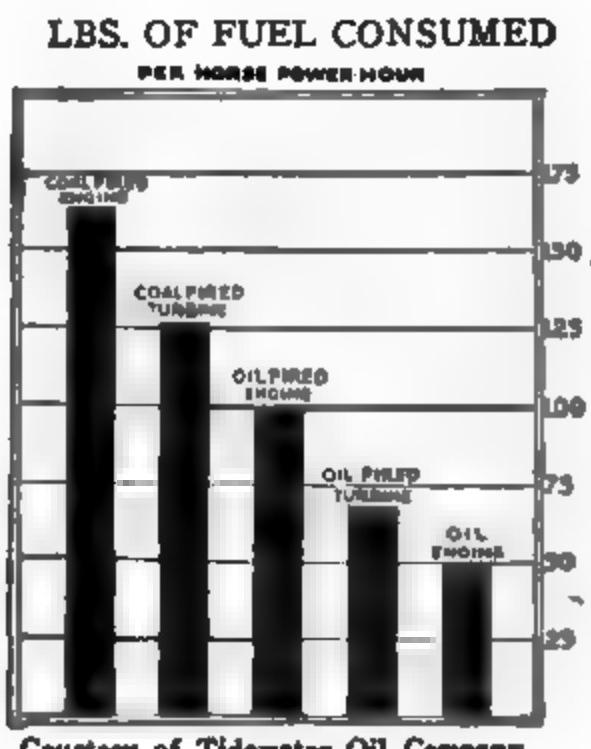
"2. For the first time a two-cycle internal combustion heavy oil engine has been perfected which produces the same horse-power as a four-cycle engine practically twice its size and is at the same time adapted to large cargo ships while saving two-thirds in fuel cost alone, as compared with steam-driven oil-fired vessels.

"Neither of these developments is theoretically a new idea. For years Europeans have successfully operated large ships with Diesel engines. The achievement of Art West, the Bethlehem designer, who is at the head of our power department, is in the adaptation of the two-cycle engine to American operation and in its perfection for practical use in cargo vessels of any size.

"The success of this engine has already been demonstrated in two ways. It was installed and operated for ten months as part of the power plant of the Bethlehem Steel Corporation at Bethlehem, Pa. It was then installed in our new ore-carrying vessel, the Cubore, which took completed on regular schedule time its first voyage to Cuba and return."

It is to be hoped that this initial success augurs well for the future of Diesel engine construction in America.

oil more efficient than coal.—Many of the advantages which the motor ship possesses accrue from the use of oil instead of coal. But that substitution is not characteristic of the motor ship alone, since oil is now used on many steamers under the boilers. We therefore refer to the next chapter in which these advantages are fully discussed. It should be borne in mind, however, that the motor ship emphasizes these savings to a considerable degree as the following diagram shows:



Advantages of the motor ship.—But there are features peculiar to motor ships. Above all, they dispense with the boiler, and therefore the carrying capacity is increased by the space and weight of that bulky piece of equipment, besides the weight of the water in the boilers. As far as the latter is concerned, it should be mentioned that modern steamers carry their own condensers, which reduces the quantity of fresh water which has to be

carried. On the other hand, the motor ship needs a certain quantity of water to cool the engines. Also the Diesel engines are somewhat larger than the turbines or reciprocating engines, so that not all the space saved by the absence of boilers is net gain.

There are also some minor advantages, such as the saving in the racing of propellers in heavy weather, the constant readiness of the ship to start and the possibility of very rapid manoeuvring, with full ahead to full astern accomplished in a few seconds.

There can be little doubt that the motor ship has successfully passed the experimental stage and has come to stay. President W. C. Teagle, of the Standard Oil Company of New Jersey, writes of the Diesel engine:

"Its future is reasonably secure. Within a few years we should see this type of internal combustion engine consuming low grade oil, driving large vessels across the seas with wonderful economy in both operating force and fuel consumption." Also, to quote Mr. Edward N. Hurley:

"With the motor ship we can have an entirely new era in ocean transportation. It calls for skill and effects economies that will yield good wages; and its flexibility and speed should facilitate rearrangement of the world's shipping routes, so the seaman may get home more frequently and have a home worth getting to."

"The motor ship is here. But it still needs development and application. Thus far it has been built chiefly in small tonnage freighters running at moderate speed. These have been highly successful economically; but there are still certain shortcomings in machinery and organization to be dealt with."

"The Diesel engine must be freed of some defects that

ive appeared under the stress of ocean voyages, and must also be built in larger units to furnish greater horse-power for bigger ships running at higher speed. The problems now are entirely questions of engineering, and American ingenuity should prove adequate to develop the fast motor liner for passenger traffic."¹

¹ E. N. Hurley, *When Coal Oil Johnny Goes to Sea*, p. 6.

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CHAPTER IX

RECENT TENDENCIES IN THE DEVELOPMENT OF THE CARRIER

War emergency prompts invention.—“Necessity is the mother of invention,” and never was there a direr necessity pressing upon the shoulders of mankind than that which the Great War brought in its train. For a time the greatest need seemed to be *men*, then it was *guns*, then *shells*, but probably the loudest cry went up for *ships* and more ships. Ordinary means proved inadequate to satisfy the extraordinary demand. So the war necessity set the inventive genius of man to work to produce new means.

Nowhere was progress in ship construction more rapid than in this country, where existing shipbuilding facilities were as inadequate as potential expansion was enormous, and where the lack of the former could be filled from the surplus of resources with which this country is blessed.

The pressing need of ships affected shipbuilding in two ways. It led to new methods of construction and it stimulated experimentation with and application of new materials and prompted a wider use of materials formerly known but despised.

The economic background of the standardized ship.—The magnitude of the emergency construction task,—that is, of the task of providing tonnage to move millions of soldiers, their equipment, food, etc., and to replace the enormous war losses,—was such that existing

expedients were utterly insufficient. Existing yards, though enlarged, were crowded with work for the navy—mainly destroyers, submarine chasers, etc.,—and with private orders. The shortage of trained shipworkers was such that when a Pacific yard had just succeeded in getting a train-load of riveters, etc., out to the coast, Atlantic yards would fetch them all the way across the continent to do their work. Moreover, the output of ship steel for many months in advance had been allotted to the existing yards for merchant work then under way, and for naval requirements. To the shortage of labor and material should be added the limitation of experience in shipbuilding, organization, etc. In the face of this, the United States was called upon to furnish an amount of tonnage, such as no country, not even England, had ever built in its record year.

The overburdened condition of the shipbuilding industry was in sharp contrast to the condition prevailing in other quarters. Owing to the standstill in the building industry, and because of the cutting off of their material, many steel shops for structural and bridge work were idle. If a way could be devised whereby they could be set to work to build parts of ships, to be transported by rail to great assembling shipyards, two difficulties could be overcome at one time. And that is what happened. The “fabricated” ship, also called the structural steel standardized cargo vessel, was the solution which saved the situation.

Mr. Redfield proposes ship standardization.—In a letter written by the Shipping Board to the Senate Committee of Commerce, May 5, 1917, credit is given to Ex-Secretary of Commerce Redfield, for having first proposed the scheme. We quote:

"A reasonably careful investigation among the steel manufacturers has proved the feasibility of the scheme proposed by the Secretary of Commerce several years ago for the fabrication of the greater portion of the material entering into steel vessels at the many great fabricating plants of the country, and their assembling into the structure of the vessel at the seaboard or on the Great Lakes. A great bridge-building corporation, which has successfully met the competition of the entire world in a number of its enterprises, has seriously proposed to us to "build 100 ships of over 3,500 tons dead-weight carrying capacity, the first to be delivered within six months and one ship a day thereafter. They plan the utilization of Secretary Redfield's scheme of standardized fabricating and assembling the parts thereafter at the shipyard."

Engineering aspects of standardized ship construction. —In May, 1916, the Department of Commerce issued a booklet entitled, *Standardization in the Construction of Freight Ships*, written by E. Platt Stratton, a consulting engineer for the New York Board of Underwriters and formerly Supervisor of the American Bureau of Shipping. We quote the opening paragraph, as it sums up the general argument:

"Signs multiply of a disposition in the United States so to standardize the construction of cargo types of steamships as to greatly reduce their cost. This tendency is to be encouraged in every way possible, since its successful development will go a long way toward making the United States entirely independent of other countries in the construction of ships for its foreign carrying, as the country always has been independent of foreign countries in the construction of ships for its

domestic carrying." The pamphlet concludes with an excerpt from the *Marine Engineer and Naval Architect* of London, April, 1916, which shows that in England also naval builders were aware of the possibility as well as of the advantages of this plan.

English psychology against ship standardization.— But in those days the main argument was cheapness. This, however, was superseded in 1917 by the crying need for speed and quantity production. Prompted by these forces the Governments both of the United Kingdom and the United States adopted standardized construction as the official method. But in England conditions were very much less favorable to the plan than in the United States. The British mind is individualistic and abhors standardization. *Fairplay* voiced this horror as follows:

"The principle of standardization is a deadening, soul-destroying thing. It crushes individuality of design in production, just as it kills out individuality of performance among workmen."¹

And again, Walter Runciman, a British shipowner, said:

"Put an end to the fandango moonshine of standardized ships, which nine-tenths of the people who use the phrase imagine to be an up-to-date, progressive invention, whereas the type is wholly reactionary."²

Nevertheless, the British Government went ahead with its program, convinced that time, labor and material could be saved in this way. But the plan reached much larger proportions in the United States, where fabricat-

¹ *Fairplay*, Sept. 13, 1917, p. 448.

² *Glasgow Herald*, Dec. 29, 1917, p. 36.

ing yards were created whose annual building capacity exceeded the maximum annual output of any nation.

Fabricating methods explained by Mr. H. R. Sutphen.—The substitution of fabricating methods for regular shipbuilding practice involves important changes in construction. Without going into technical details we content ourselves with quoting a statement of Mr. Henry R. Sutphen, the Vice-President of the Submarine Boat Corporation, read at the twenty-sixth general meeting of the Society of Naval Architects and Marine Engineers, held in Philadelphia, November 14 and 15, 1918:

“Our problem was first to use commercial structural shapes and plates that could be had in large quantities, and design the ships so that these could be assembled with a minimum of alteration through bending, and next, that the plans should be so developed that the bridge-builder and the structural shops should have no difficulty in reading the drawings and adapting their experience and equipment to the fabrication of parts for ship construction. The naval architect had to speak and draw in terms familiar to the great army of structural steel workers, requiring some radical modifications in the matter of classification details, and imposing rather pronounced departures from the ordinary ship-shaped models, in order that the materials at hand might be incorporated in the most efficient manner for maximum production and accuracy of fit. In brief, this necessitated the elimination of curves and the substitution of straight lines and angles wherever possible.

Many modifications and innovations necessary.—“The decks are without camber and generally without sheer, the sides throughout the length of the parallel body are perpendicular, the bottom is flat, and is merged with the

sides by a short and abrupt curved bilge. By eliminating the deadrise characteristics of the vessel it was possible to adopt a uniform size of floor throughout the parallel body and to have recourse to longitudinals which would all be of the same height. Forward and aft of the parallel body the model subscribes with reasonable closeness to that of the accepted design of ocean-going carriers.

"So far as the straight parts of the parallel middle body, flat tank tops and flat decks were concerned, it was an easy matter. It was simply a case of making detail drawings exactly as they would be made for a railroad bridge, giving definite location by dimension of every hole, rivet, and each piece of steel. In all, some 330 drawings were made of details of hull fabrication. From these drawings all the steel was ordered from the mills exactly to the length required. In the molded portion of the ship, however, the problem became more complicated to the bridge engineer, as this section of the shell could not be mathematically developed. Such plates and shapes were developed full size on the mold-loft floor, reproduced on template paper, having all rivet holes punched in them on proper gauge lines and for a matter of record carefully measured up and detailed to dimension on individual drawings. Even with complete drawings it was difficult for the fabricating shops to reproduce the plates on account of the edges and gauge lines being curved. These lines could only be located by dimensioning a series of points on the curves.

"As we could not count upon two men springing a batten and getting the same shape between two points, we overcame this phase of the problem by sending tem-

plates of the shell plates in the molded sections to the fabricating companies. These templates, made on template paper approximately 1/32 inch thick, were direct copies of the original template developed on the mold-loft floor. A difficulty was experienced in the shrinkage and expansion of these templates, and to insure the change of shape of the templates, causing no misfits, each template was marked before being sent out with certain dimensions. To begin with, the paper used is fairly heavy fabroid material, which has a rather low coefficient of expansion. It was then marked and cut in accordance with the development on the scribe board, and rivet-holes, etc., were laid out upon the paper, spaced and dimensioned with great accuracy."

Rail transportation of parts affects construction.—But that was not all. Rail transportation had to be considered also. Thus smoke-stacks, if they were to be manufactured in inland structural shops, had to be so designed that their maximum diameter came within the width of an ordinary gondola car. The size of tunnels was another factor for which allowances had to be made.

Nevertheless, in the case of the boats of the Submarine Company, 96 per cent. of the total weight of the hull was fabricated at outlying establishments, while 100,000 of the 4,270,000 rivets were driven in at inland factories, where the work was done on a more economical basis. Chairman Hurley stated before the Senate Committee on Commerce, on December 21, 1917: "In the case of a fabricated ship, they lay the keel in a shipyard, and the old way was to bring all the plates there and drive the rivets on the framework. This plan is to have forty or fifty outside shops put two plates together and drive the rivets and

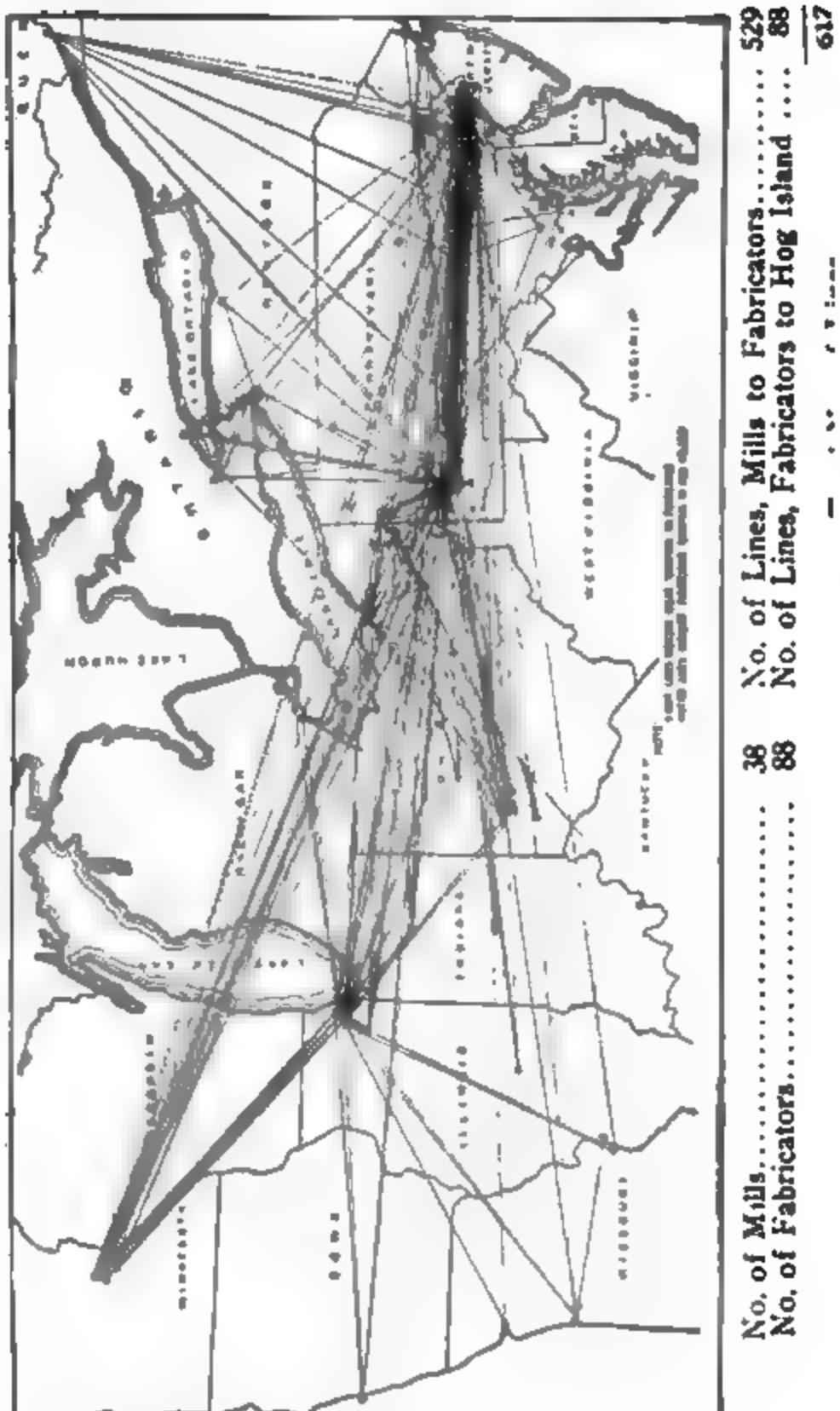
bring the plates to the shipyard and put the plates on; and 50 per cent. of the riveting is done outside."

The whole nation contributes to work of the fabricating yard.—Twenty-eight steel mills supplied material to fifty-six fabricating plants, not to mention the contributing labors of two hundred foundries, machine, pipe, joiner and equipment shops. We reproduce here a map which shows the various plants which contributed parts to the Hog Island yard. This map, better than a long story, reveals the gigantic task which those who organized and coordinated this work had to face. And Hog Island was only the biggest of several shipyards which worked along the same principle. The American International shipbuilding Company yard at Hog Island, the Submarine Boat Corporation yard at Newark Bay and the Merchant Shipbuilding Company yard at Bristol, Pa. (near Trenton, N. J.), were the three great establishments where fabricated ships were built for the United States Shipping Board Emergency Fleet Corporation. The map on page 160 shows the routes of steel from mills to fabricators and from fabricators to Hog Island.

The record of the fabricated ships.—The important question now is: how do these ships compare in regard to operating economy and efficiency with the regular type of ship? This question is hard to answer in view of contradictory statements in contemporary literature. However, the facts that both Lloyd's and the American Bureau of Shipping gave these ships the highest rating, and that the Submarine Boat Corporation, according to recent reports, is willing to risk its money in continuing on its own account the building program which the United States Shipping Board cancelled, seem to indicate that they ought to be useful additions to the world mercantile fleet. The

OCEAN SHIPPING

ROUTES OF STEEL FROM MILLS TO FABRICATORS AND FROM FABRICATORS TO HOG ISLAND



tests made at the Government Model Experimental Station disclosed that the ships are rather economical in their propulsion requirements. Many are oil-burners and carry their fuel in double bottoms. It seems certain that standardization, quantity production, and continuous process principles must lead to economies through reduced overhead, greater efficiency of specialized working crews, large scale purchases of material, and above all through the influence of repetition in the production of parts, unless they are offset by drawbacks such as the following:

Drawbacks of ship fabrication.—Drawbacks¹ of fabricating vs. building ships.

- (1) Operations to allow large scale production tend to grow too big, necessitating much red tape and excessive checking up.
- (2) High cost of transportation in assembling parts owing to:
 - (a) long freight hauls from widely scattered mills.
 - (b) high freight charges on set-up ship parts as compared with ship plate.
- (3) Waste, owing to necessity of installing large warehouses where materials are apt to become jumbled.
- (4) Inefficiency of fabricators.
- (5) Difficulty of adjustment.
- (6) Idle capital tied up owing to impossibility of continuous process.

¹ Based largely on a statement given out by Charles M. Schwab, of the Bethlehem Steel Corporation, for a time in charge of the Emergency Fleet Corporation. (See *Nautical Gazette*, March 13, 1920.)

On the whole, modern tendencies in ship construction seem to call for such specialization of construction that the place for the standardized ship is undoubtedly limited. This is also the conclusion voiced by one of the leading shipbuilders of Europe, Dr. E. Foerster of Hamburg, in his valuable paper on "Wirtschaftliche Konstruktionsfragen im künftigen Schiffbau" (November 1919).

The rivetless ship.—The efforts to speed up ship production have led to another innovation in shipbuilding, the introduction of the rivetless or welded ship. For ship repairs, thermit welding had the official approval of both Lloyds and American Bureau of Shipping; but it remained for the war need to lead to the attempt at dispensing with the riveter, or at least partly so. This new type of vessel is claimed to be:

- (1) lighter, because the weight of the rivet head is saved; the necessity of heavy buttressing to offset the weakening due to the rivet holes is obviated.
- (2) stronger, because the danger of tearing asunder along the row of rivet holes is eliminated.
- (3) more water-tight.

Lord Pirrie, British Controller-General of Merchant Shipbuilding during the war, is reported as satisfied with the feasibility of this new system of building. The United States Shipping Board has been in close touch with experimental work and is making arrangements for the building of a number of 10,000-ton standard ships in which the use of rivets will be reduced to about $2\frac{1}{2}$ per cent. of the number usually used (*Scientific Ameri-*

can, September 28, 1918). In the second annual report of the Shipping Board we read the following:

"In order to eliminate as far as possible the laborious process of riveting, the possibilities of electric welding have been carefully studied by a committee of experts, and this work has been so far developed that it is now possible to weld many of the steel parts of a ship. A notable saving in the weight of the ship is thus made possible, as well as the cheapening and hastening of production."

The Isherwood System.—Another system of construction, the "Isherwood" or longitudinal system, while not a result of the war, was more generally adopted because of its increased efficiency and of its economy of material and of labor during construction.

The advantages of this system which, as the name implies, lays stress upon the longitudinal line and sets the transverse frames and beams at widely spaced intervals, generally twelve feet, are summed up as follows:

"In summing up, therefore, it is quite evident that in the 'Isherwood' system is to be found a method of constructing ships which, compared with the transverse system, provides, without extra cost to the owner, a much stronger and more scientifically constructed vessel, which carries a considerably increased deadweight on the same draught, eliminates wear and tear due to vibration, reduces the cost of maintenance, and presents a greater resistance to damage, besides possessing many more advantages of which the foregoing are but a few."¹

The following statistics show the extent to which this

¹ See *Fairplay*, February 1, 1917.

longitudinal system of ship construction has progressed and the number of ships ordered during each particular year:

Year	No. of Ships	Deadweight Capacity
1908	6	31,608 tons
1909	30	181,384 tons
1910	40	271,760 tons
1911	64	474,043 tons
1912	100	818,553 tons
1913	30	215,686 tons
1914	41	358,288 tons
1915	157	1,196,899 tons
1916	152	1,117,779 tons
1917	180	1,655,693 tons
1918	250	2,364,778 tons
1919	210	1,887,079 tons
<hr/>		
Totals	1,260	10,573,550 tons

The Denman-Goethals Controversy.—The rush to get ships, coupled with the enormous strain upon the steel industry of the country due to the war needs not only of the United States, but also of the allied countries, prompted shipbuilders to turn from steel to other materials as far as possible. In the first place we witnessed the temporary revival of the wooden shipbuilding industry, which became so notorious through the unfortunate controversy between Chairman Denman and General Goethals. When the storm of that discussion had subsided, it was found that while the steel ship is undoubtedly far superior, the shortage of tonnage existing up to the armistice was such as to justify the building of wooden ships wherever this could be done without interfering, through division of capital, labor and managerial talent, with the steel ship program. As far as labor is concerned, wood shipbuilding, on the whole, draws upon sources of supply different from those used in steel ship construction.

For a while, much was heard about composite ships, i.e., vessels with steel frames and wooden sheathing. Their career, however, was short-lived, as it was found that they cost almost as much as the all-steel ships without possessing many of their advantages.

Experiments were also made with cast-iron ships.

The concrete ship.—The war, furthermore, lent considerable impetus to the construction of concrete vessels. Experiments with "ships of stone" had been made as early as 1849, when a Frenchman built and patented a concrete row-boat.¹ But until comparatively recent times, few people knew of the consideration that had been given to the building of concrete boats, barges, ships and other floating constructions. It was again the ship shortage, caused by the war, which put the concrete ship on the map, that is to say, assured it of world-wide attention and earnest consideration by the various governments. In the *Second Annual Report of the United States Shipping Board* we read that contracts for forty-two concrete ship hulls were let, out of a total tonnage of approximately 300,000 tons. The reason which the Shipping Board gave for limiting the program to this figure was not fear of failure—it stated expressly that "the practicability of the concrete ship as an emergency agency has been established by investigation and experimentation"—but the fact that the hull-producing capacity of the country in steel and wood ships was in excess of what may be termed the power and equipment producing capacity for fitting out these ships.

Much of the recent advance is due to the success of the concrete experts in working out a concrete aggregation which is so light that it floats on water and yet has

¹ *Scientific American*, August 31, 1918, p. 165.

strength and toughness greater than that of the gravel or stone which is generally used.

Advantages of concrete ships.—The advantages claimed for the concrete ship have been summarized as follows:

"Concrete ships are fireproof.

Wood-boring worms cannot attack the hull.

Concrete ships are rat-proof.

Concrete ships require practically no maintenance.

Construction methods are economical and the cost is low.

Concrete ships can be built quickly.

Concrete ships will neither rot nor rust.

Calking, painting, and similar maintenance of the hull is unnecessary.

Concrete ships will withstand very rough usage.

Materials required may be obtained readily anywhere at low cost.

Less labor is required and cheaper labor may be employed.

There is no likelihood that the hull of a properly constructed concrete ship will buckle.

Because of the smooth surface and the absence of angular projections, skin friction is greatly reduced.

Concrete vessels may be floated before completion.

Concrete vessels are lighter than similar ones of wood.

Barnacles and other sea growths find conditions unfavorable to their growth."¹

It may be borne in mind that this compilation was made by the Portland Cement Company, a body by no means disinterested in the wide adoption of this scheme.

The record of the "Faith."—The largest concrete ship built is the "Faith," launched in March, 1918, by the San Francisco Shipbuilding Company. The following description covers the most important details:²

¹ *Concrete Ships, a Possible Solution of the Shipping Problem*, published by the Portland Cement Association, December, 1917.

² J. R. Smith, *Influence of the Great War upon Shipping*, p. 235.

"It is ten times larger than any concrete vessel on record in the United States. The vessel is 320 feet long, $44\frac{1}{2}$ feet wide, 30 feet deep and draws when loaded 24 feet. The floor has a thickness of $4\frac{1}{2}$ inches and the walls of 4 inches. She weighs 600 tons more than a steel vessel of similar capacity. The six bulkheads and the deck are also made of concrete. The bottom of the vessel is covered with a wooden water-tight floor. Displacement is 7,900 tons; carrying capacity, 5,000 tons. Five hundred and forty tons of steel reinforcing in the form of bars and a basket work of steel mesh were used. The bars were welded together, thus reducing to a minimum the quantity of steel required by avoiding laps that otherwise would have been necessary. The engines are oil-burners of 1,750 horse-power. The speed of the vessel is 10-11 knots, 160 barrels of oil a day being consumed. In the designing of the vessel no provision was made for water ballast, as the designers believed that the heavy concrete floor would make the vessel ride evenly. The vessel was launched on March 14, exactly as previously announced, and just six weeks after the concrete was poured. She was fully equipped by May 1, passed her trial trips satisfactorily and went to work early in May. The cost of the vessel was \$750,000, a large part of which is due to the fact that it was a first attempt."

Classification of concrete ships.—On the basis of construction two main types are distinguished, the monolithic and the unital ship. The former is moulded and when finished appears as one piece of concrete. In the case of the latter, different parts are moulded independently and afterwards put together.

An important measure of the success of the new method of ship construction is the rating given to it by the great classification societies, principally Lloyds. This conservative and authoritative body gave the highest rating to a number of reinforced concrete ships, although placing them in an experimental class which involves the necessity of renewing the rating at the end of a year or voyage, as the case may be.

If the fact that the Shipping Board Emergency Fleet Corporation cancelled all those contracts for concrete ships which could be given up without incurring too great a loss, is to be taken as a criterion for the permanency of the concrete ship's success, its immediate future is not overbright. However, further improvements in producing the material itself and in applying it to ship construction, coupled with the abnormal rise in the price of steel, could turn the tables to the new comer's advantage.

Special vessel types.—There is another phase of development to be considered here which did not receive its stimulus from ship shortage but which is a concomitant of the general progress in ship construction, and a response to the more exacting demands of commerce. We refer to the increasing use of ships built for specific trades, ships equipped with special installations to enhance their usefulness by reduced turn-around, better utilization of cargo space, and greater attention given to the handling of cargo.

The most conspicuous of these specialty ships is the oil tanker. We had occasion to mention the enormous increase of this type of carrier during the war. In view of the extraordinary importance of the tank steamer of to-day, its history is interesting.

The evolution of the tanker.—The early method of shipping oil in forty-gallon barrels was dangerous and not economical,—dangerous because in cases where storage was faulty the barrel "got a roll on it";—not economical because of the lost space, amounting to practically half the loading capacity of the ship. The four-gallon tin cases, twos or fours packed in wooden cases, effected a more economical stowage. Steamers were especially designed for the transport of oil in cases. But the loading and unloading of barrels and cases alike was a tedious and expensive factor; expensive not merely because of the labor cost, but perhaps more so on account of the vessel's time wasted. To discharge a vessel loaded with 10,000 barrels of oil required at least four days.

Difficulties of bulk transportation.—The carrying of oil in bulk proved to be the solution, but not until numerous difficulties had been overcome. Petroleum expands easily under the influence of rising temperature, approximately at the rate of 1 per cent per 20 degrees Fahrenheit. On a sea voyage variations in temperature of from 40 to 50 degrees are not unusual, which would more than suffice to burst open the fully loaded and sealed tanks.

"To provide for the expansion of oil due to increase in temperature and to prevent explosion due to the forming of gases, each tank is also fitted with an expansion trunk. Some tank vessels are very large, having numerous deep oil tanks, additional 'summer tanks' between the main and afterdecks for the stowage of oil during the warmer seasons, and a cargo hold as well as additional spaces below the 'shelter deck' for the transportation of miscellaneous freight cargoes other than oil."¹

¹ Johnson and Huebner, op. cit., p. 44.

An important method of ship classification is the great classification conservative and rating to a number placing them in the necessity of risk or voyage, as the

If the fact that the Corporation cancellships which could great a loss, is to the ency of the concrete is not overbright producing the main construction, consisting of steel, could turn vantage.

Special vessel typ development to be come its stimulus from comitant of the general and a response to commerce. We refer to specific trades. Conditions to enhance the better utilization of given to the handling

The most conspi oil tanker. We have increase of this type of the extraordinar to-day, its history

will create empty either. The in which it penetrates the builders' of the very volume petroleum has yet to be conquered. The tankers await their load of liquid cargo those who have to

the more remarkable in 1886¹, when steamer "Glückauf" Mr. Riedmann of engineer in this field. This of oil which this latest tankers, ordered are to have a deadweighting them to carry with the largest tanker "Ireneando" of the Eagle Line, which has a deadweight of 1920, the Lloyd's Register, consisted of sailing ships with an average tons. 89 per cent of United States and England.

In 1873 two vessels in the equipped with tanks for bulk oil, caused the disuse of the North Atlantic Steam Navi-

About 250 additional tank vessels are building to-day and when the tankers now under construction are completed the tanker fleet of this country will total 390 vessels, while that of England will embrace 315 ships.¹

There are other tank vessels besides those carrying petrol. Thus, to quote one example, the American Sugar Refining Company at present owns a steel tanker with a capacity of 750,000 gallons of bulk molasses, which operates between the West Indies and the United States. The same company has under construction a steel tanker with a capacity of, approximately 1,250,000 gallons. This vessel deserves particular attention because it is intended to be a combination tanker and cargo steamer. We quote the following details from the *Nautical Gazette* of April 10, 1920:

"This vessel will be of 6,300 tons deadweight, her dimensions being as follows: Length, between perpendiculars, 360 feet.; breadth, 50 ft.; and depth, 29 feet. The specifications call for a single screw steamship with straight stem and elliptical stern, constructed on the longitudinal system of framing.

The machinery will be located in the after end of the ship, provision being made for separate engine and boiler rooms, aft of the pump room. The section of the vessel's double bottom directly beneath the machinery is to be divided into compartments for the carrying of feed water. The hold will be divided into six tanks for the carrying of oil or molasses in bulk or general cargo, the fuel tank being located between tanks, numbers 3 and 4. The center line bulkhead extending to the upper deck will divide the tanks into port and starboard compartments, while the wing spaces between the main and upper decks will be divided into four summer tanks.

The vessel will be constructed with large hatch openings, and equipped with two steel Sampson posts for the expeditious handling of cargo."

¹ See *Nautical Gazette*, February 5, 1921, p. 179.

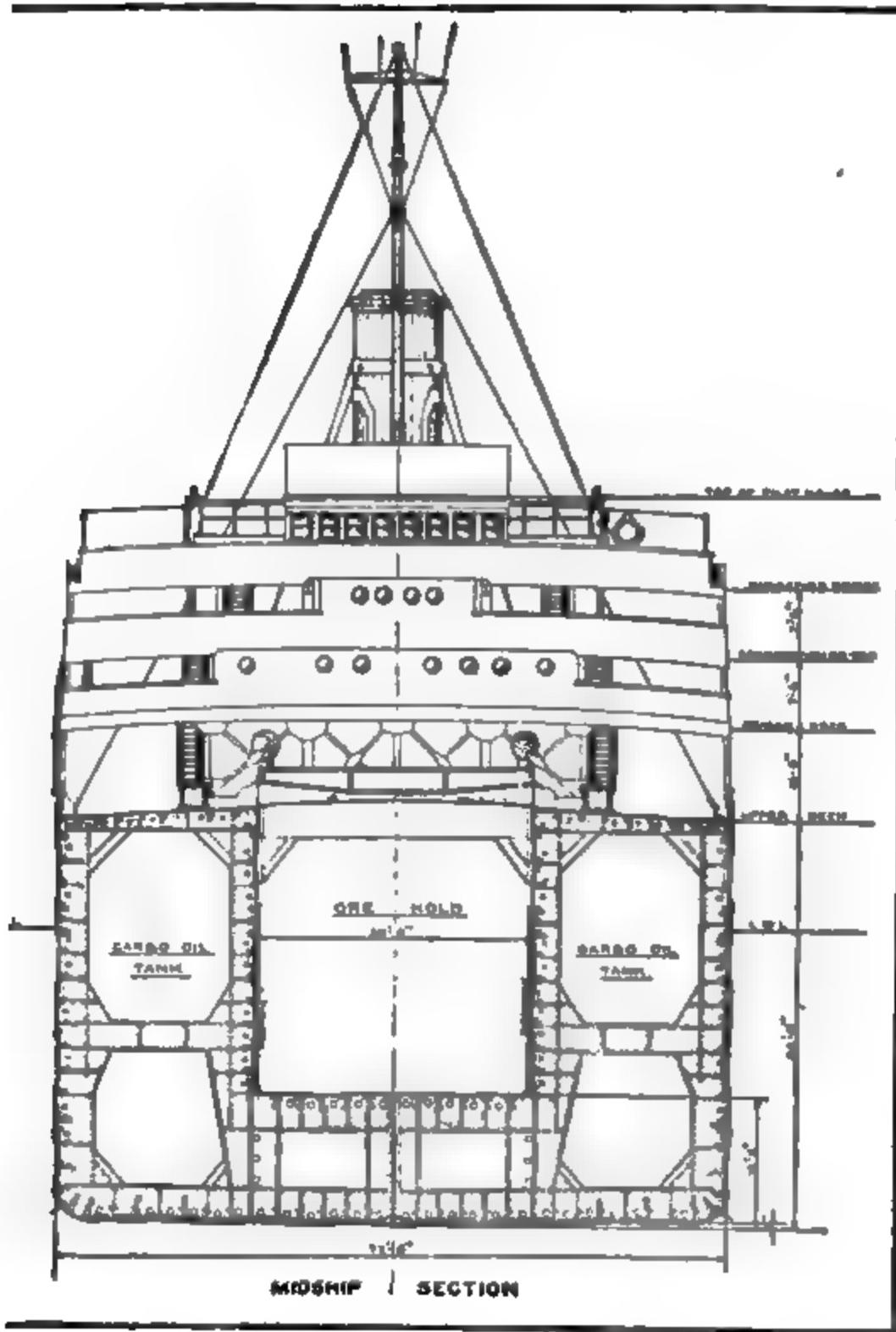
This utilization of a tanker for the transportation of general cargo is of special interest. But, as yet, this is an exceptional case. It is an experiment.

Among the most interesting innovations in the line of tank vessels are the combination oil and ore vessels which the Bethlehem Steel Corporation is said to be constructing for the Chile service of the Ore Steamship Company, a Bethlehem subsidiary. The new steamers, illustrated on page 173, have the following characteristics: length over-all, 571 feet, 6 inches; length between perpendiculars, 550 feet; breadth moulded, 72 feet; depth moulded, 44 feet; draft loaded designed, 32 feet 4 inches; draft light estimated, 10 feet, 9 inches; block coefficient, 0.817; midsection coefficient, 0.989; longitudinal coefficient, 0.826; speed knots loaded, $11\frac{1}{2}$; cruising radius knots, 13,000; framing longitudinal; class A-1 American Bureau of Shipping; deadweight capacity, 20,500 tons; displacement, 28,830 tons; complement, officers and crew, 53.¹ The plan is to utilize the full deadweight capacity both ways by oil on the voyage to Chile and by ore when coming back.

Drawbacks of tank vessels.—The great drawback of the tank vessel is its exclusive usefulness, i. e., it is limited to the one liquid bulk commodity for which it is constructed. (Only in the rarest cases is the carrying capacity utilized in both directions of a voyage). Only occasionally a cargo of pig-iron or of similar nature is picked up. Whether experiments in the carrying of cocoanut oil on the return voyage will lead to a complete success is so far questionable. But exactly in this one-sided employment lies the secret of the success of the specialty ship. The idea is to build an ideal ship for

¹ *Marine Review*, April, 1921, p. 161.

COMBINATION OIL AND ORE VESSEL



Courtesy *Marine Review*.

NEW CARRIER SHOWS RADICAL HULL DESIGN
Combined freighter-tanker for steelmaking interests departs widely
from accepted ship designs. Either bulk or liquid freight
will provide full deadweight cargo

one particular cargo and turn it around so fast by means of mechanical loading and unloading devices—pumps in the case of tank vessels—that the net result is better than could be achieved by the old fashioned tramp, which was built to suit the greatest number of tasks imaginable.

Coal and ore vessels.—This modern tendency to employ specialty type is spreading. Many years ago it invaded the British coal trade, especially the Eastern coal trade, with near-by continental ports. Self trimming colliers with mechanical loading and unloading devices made their appearance and successfully competed with the old-fashioned tramp. The Ore Steamship Company, a Bethlehem Steel subsidiary, with its fleet of "cubore" ships, is making the round trip between Cuba and Baltimore in twelve days, carrying over 11,000 tons of ore on each trip, and is another example of this tendency. In this particular case it is simply an application to ocean shipping of a practice well established on the Great Lakes, though here a return cargo of coal is usually taken in the opposite direction of the ore stream. Also in the lumber trade a special type of vessel has been developed,—the sea schooner.¹

Refrigerator ships.—There remains for discussion another important group of specialty types, those built to carry perishables. The first trade in which they were employed was the meat-carrying business. We read that in 1880, the first shipment from Australia, consisting of 400 carcasses of mutton, was landed in London.² Twenty years later the importation of sheep and lambs had increased to over 7 million carcasses; by 1910, the number

¹ Johnson and Huebner, op. cit., p. 44.

² Kirkaldy, *The British Shipping Industry*, p. 114.

had increased to 13 million, to which must be added over 4 million carcasses of beef.

Charles Tellier, of Paris, is given credit for having built the first refrigerator ship, the "Frigorifique," which carried fresh meat at 32 degrees for three months.¹

A modern refrigerator ship is equipped with miles of cooling coils—one is described as having 73,000 linear feet, or over 13 miles of pipe,² which are kept cool either by the older ammonia process or the more recent ethyl-chloride method.

"The method adopted is to line the ship's side with wooden boarding, leaving a space of about twelve inches width between the wood and the plating of the ship's side and deck. This space is filled up with either charcoal or silicate cotton, for the purpose of keeping the heat out and the cold in. Thus considerable cargo space is sacrificed, and if there be no meat available, and the vessel has to load other forms of cargo, there is a loss. Moreover, if wool be stored in an insulated hold, it is impossible to use screws for stowing purposes, for though by screwing the wool the quantity carried is increased, there is a danger of damaging the insulation; hence again there is a loss. It would be unwise, too, to carry heavy dead-weight cargo, such as ore or rails, in an insulated hold, owing to the possibility of damaging the insulation."³

The largest fleet of refrigerator ships is probably the Blue Star Line, recently acquired by the Union Cold Storage Company (the British Beef Trust) consisting of fifteen steamers with an aggregate capacity of over 120,000 deadweight tons.⁴ Much meat is also carried by combination passenger-freight ships which have portions of the cargo space equipped with cooling installations.

¹ Newland, *Romance of Modern Commerce*, p. 190.

² *Marine Review*, Sept., 1919.

³ Kirkaldy, op. cit., p. 118.

⁴ *Shipbuilding and Shipping Review*, November 20, 1919.

Similar facilities are found on fruit steamers, such as the banana carriers of the United Fruit Company. This fruit requires a constant temperature of 53 degrees to preserve it on the trip from the tropics.¹ Reference to this type of carrier will be made in a later chapter.

¹ Adams, *The Conquest of the Tropics*, p. 124.

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CHAPTER X

THE BUNKERING PROBLEM

The United States leads in use of oil as marine fuel.— The outstanding feature of the present phase in the evolution of ocean transportation is the increasing use of fuel oil. The rapid rise of the motor ship with its oil-burning Diesel engine was outlined in a previous chapter, but besides this, an increasing percentage of the world's steam tonnage is being put on an oil-burning basis. New ships are constructed to burn oil, old ones are being converted into oil-burners.

The United States, whose newly acquired merchant marine, because of its youth, reflects this tendency more strongly than the commercial fleets of other nations, has been foremost in the movement. "Eighty per cent. of the sea-going ships flying the American flag are, or soon will be, oil-burners. Less than 10 per cent. of ships flying foreign flags are oil-burners."¹ That America should lead seems quite natural, for this country at present produces more than 60 per cent. of the world's oil. From this it appears that this country can afford the transition more easily than those less favored.

Many have foreseen the growing importance of oil as a marine fuel, but few would have dared to predict so rapid a transition from coal to oil as has actually taken place. Less than twenty years ago a British Royal commission found that the dawn of the oil age existed

¹ Edward N. Hurley, *The New Merchant Marine*, p. 194.

only in the minds of dreamers gifted with too vivid an imagination. They could not foresee the war, however; and it was the war emergency which accelerated a slow process so as to turn an evolution into a revolution.

War causes transition from coal to oil.—Two main causes, originating in war conditions, were responsible for this remarkable change. In the first place the war caused an extraordinary labor shortage. The United States was called upon to build, almost overnight, a merchant marine numbering millions of tons. The difficulty of finding shipbuilders was great; but the task of recruiting the sailors, stokers, engineers, etc., to man the fleet, seemed desperate. Consequently anything which limited the number of men required to run the ships was eagerly adopted, and oil-burning ships are ideal crew-reducers.

American emancipation from British fuel control.—The second reason for the wholesale adoption of oil as a motive power by the United States was of a political nature. The Shipping Board, under date of November 2, 1919, furnishes the explanation under the heading, "*Shipping Board's Fuel Stations to Girdle the World.*"

"American Steamships can soon make a circuit of the world without the need of taking fuel at other than American owned fuel stations. This applies to vessels steaming east from the Atlantic Coast or west from the Pacific seaboard.

"The as yet unwritten history of this accomplishment dates from the time when war conditions developed an acute situation in the world's coal supply. During the early stages of the war, Great Britain put into effect a system of bunker license as a necessary military meas-

The United States Shipping Board realized that if the war, conditions might develop a situation which would dictate the need of a modified application of bunker license at British stations. In that event we would have been at a serious disadvantage unless immediate steps were taken to assure unrestricted operation of our ships in the world's trade. To accomplish this it was necessary to have oil-burning steamships, instead of coal-burners, with a large trading radius, and so far as practicable this to be fixed at a minimum of 10,000 miles. The British order of September 29th, 1919, justified these apprehensions. "at that time we were ready."

British coal shortage.—Great Britain was no less affected by the labor shortage than was the United States, though in a different way. During the war army needs had reduced the ranks of her coal miners; after the war the re-alignment of political forces which gave labor a stronger voice, and the new spirit prevailing among the labor classes, resulted in such an increase of cost of production, owing to high wages, and in such a decrease in the quantity of production, due to shorter hours, that British shipowners had to witness an alarming shrinkage in the amount of coal available for export bunker purposes. This situation is aggravated by high freight rates which reduce the salability of British coal in foreign markets in competition with local coal. Sir Auckland Geddes states that the quantity of coal available for exports has dropped from about 75,000 tons in 1913 to slightly over 30,000,000 tons in 1919, and that about two-thirds of the export trade is lost. Such a situation naturally drives British shipown-

ers to turn to the one substitute for the threatened bunker coal supply oil. In the Spring of 1920, the amount of British coal available for exportation and bunkering purposes was again radically curtailed. Even the United States, the largest coal producer in the world in the face of a threatened coal shortage had to put an embargo on coal exports (July, 1920).

Rapid growth of oil burning merchant fleet.—When one considers that only eighteen years ago, in 1902, the *Arab*, the first ocean-going steamship using oil, crossed the Pacific ocean, it seems incredible that to-day not far from 2,000 steamers of about eight million tons are plying the seven seas using that fuel. Indeed it can only be understood in the light of the foregoing explanations. Before the war less than 1 per cent. of the world's ocean going tonnage used oil as a fuel. To-day, more than 15 per cent. of this tonnage is said to be equipped to burn oil. Of the 3,801,211 gross tons classed by Lloyds' during the twelve months ending June 30th, 1919, 1,193,659 gross tons, or almost one-third, were constructed with equipment to burn oil. Since July 1st, 1919, the United States Shipping Board has been turning out oil-burning ships at the rate of about 500,000 deadweight tons a month. Thus, to-day almost exactly one half of the sea-going tonnage of the United States are oil-burners. By the end of 1919 the larger vessels were divided as follows —on the basis of fuel used:

United States Shipping Board Vessels of	Oil-Burning	Coal-Burning
over 10,000 tons	22	13
9,000 to 10,000	27	12
8,000 to 9,000	82	43

THE BUNKERING PROBLEM

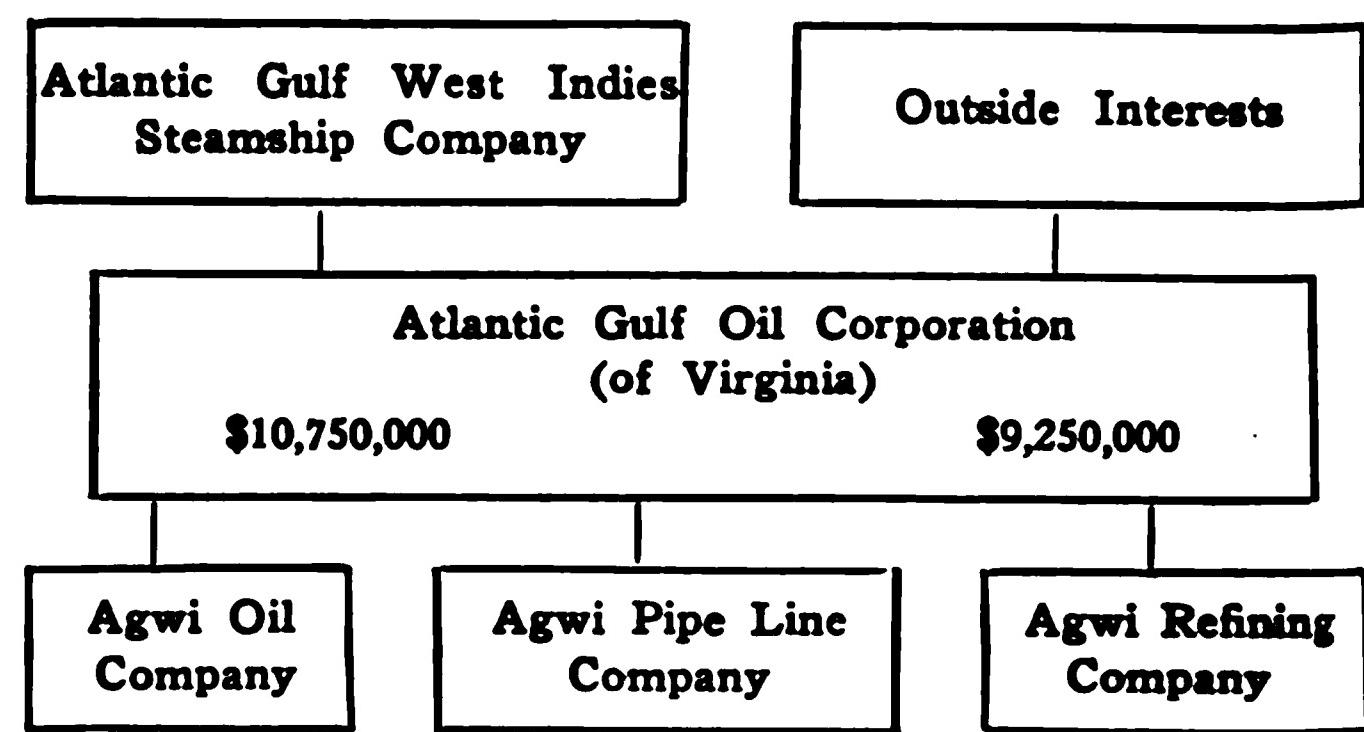
Besides the construction of new ships with oil-burn equipment, a considerable portion of the old fleet is being converted to use the new fuel. If present plans materialize virtually all of the former German liners, taken over by this country, will undergo the change. The Atlantic, Gulf and West Indies Steamship Company's ships are on the conversion schedule, so are those of the American Line and the ships belonging to the Atlantic Transportation Company. It is claimed that the American-Hawaiian company had planned the change before the war, but the ship shortage caused them to postpone this operation.¹

The "A. G. W. I." a conspicuous example.—The most notable instance among those just mentioned is that of the Atlantic, Gulf, and West Indies Steamship Company, whose plans are remarkable in many respects. This ship combine, which is a holding company controlling several important steamship lines engaged in regions indicated by its name, in February, 1919, secured from the Tepetate Oil Company of Mexico a controlling interest in certain oil properties in the south-eastern district of the Tampico Field, which were to produce by January, 1920, 45,000 barrels a day. A large number of tankers were ordered, indicating that its oil purchase served a double purpose, i.e., to supply oil as well as fuel. The details of the method of bunkering are given in the following diagram:

Britain a close second in ship use of oil.—But America leads in this new movement, other countries are not idle spectators. The report comes from

Maritime Gazette under date of February 21, 1920, reports that the American-Hawaiian company has placed orders for two large motorships of 10,000 tons each.

**CHART SHOWING ORGANIZATION OF
AGWI OIL INTERESTS**



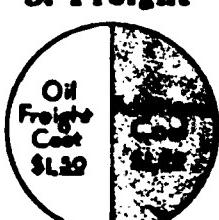
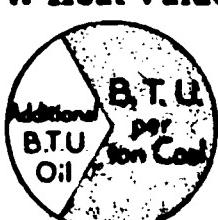
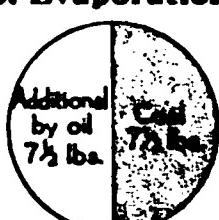
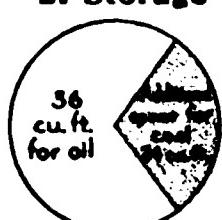
England that the change from coal to oil is nothing short of revolutionary. One hears of Cunard liners, including the Mauretania and Aquitania, White Star liners such as the Olympic, as well as units of all the great British steamship combines, laid up in repair-yards to be furnished with interchangeable coal and oil-burning equipment, or else put on an exclusive oil basis. Another significant item is the formation of the British-Mexican Petrol Company, Ltd., half of whose shares are held by British shipowners, chiefly represented by Lord Pirrie, the head of Harland and Wolff, but also a director in a half-dozen shipping concerns, on the one hand, and of the E. I. Doheny interests (Pan-American Petrol and Transport Company, Mexican Petrol Company, etc.), on the other hand. The purpose of the Company is to develop the claims of the Huasteca Petroleum Company in Mexico and to construct storage tanks at all the great seaports on the main trade routes of the

negotiations have been going on since 1915, clinched until four years later.

s of oil over coal.—The explanation for this key change from coal to oil is found in an the relative qualities of coal and oil when ne fuels. The following diagram¹ shows the glance.

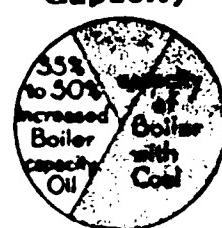
tic comparisons between oil and coal

2. Storage 3. Evaporation 4. Heat Value 5. Freight

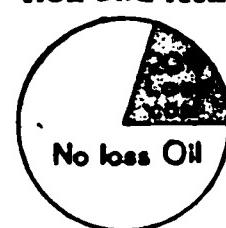


6. Oil saves one-third of storage space. 7. Oil evaporates twice as much greater heating water in same time. 8. Oil has one-third greater heating value. 9. Oil saves one-half of freight charges.

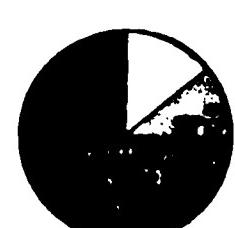
7. Boiler Capacity



8. Deterioration and Ash



9. Combustion 10. Efficiency



11. Oil increases boiler capacity more than one-third. 12. No loss with oil. 13. Oil makes perfect combustion possible. 14. Oil increases efficiency 10%.

Tide Water Oil Company.

stages are brought out strongly where oil al in marine propulsion. So many factors deadweight, cargo space, steaming radius, ncy, handling cost, and time for bunkering

facts from which one should proceed to spective merits of coal and oil as marine

Tide Water Oil Company.

fuel may be summed up in this way: It takes about 1.63 lbs. of coal to raise one horse-power per hour under a modern boiler where a reciprocating engine is used, while the same result is achieved by one pound of oil; in the case of turbines the relative quantities used are 1.25 lbs. of coal and .70 lb. of oil. Thus it appears that in each instance approximately 40 per cent. of the weight is saved. Diesel engines need only $\frac{1}{2}$ lb. of oil per horse-power hour, a saving of about 70 per cent. of fuel weight over the coal-using reciprocating engine.

Oil saves space.—Next comes the matter of space. In the first place, a ton of oil takes five cubic feet less than a ton of coal, so that apart from the fact just pointed out that less weight is required in proportion, the smaller quantity uses less space than an equal quantity of coal. If we take the extreme case of a steamer like the *Mauretania*, which uses 1,000 tons of coal a day, the saving for the five-day trip would be $5 \times 5,000$ or 25,000 cubic feet or 250 registered tons saved, if the oil were stored in bunkers, as is required with coal. But such is not the case. Almost all the large ocean vessels are provided with double bottoms, mostly for safety's sake, but also to carry water ballast. By storing the oil in these double bottoms, which is the standard practice, almost the entire bunker space becomes available for cargo or passenger carrying.

The following authentic data, from a report to the Naval Advisory Board, may serve as an illustration:

"A 5,000-ton deadweight coal-burning ship, 2,000 rated horse-power, steaming at 12 knots per hour, will require approximately 37 days time and 1,060 tons of coal to make a round trip between New York and French channel ports. This shows that 21 per cent. of the ship's deadweight capacity would be required by her fuel.

e ship burning oil could make the trip in 34 days, and
ly 584 tons of oil, or less than 12 per cent. of the ship's
capacity, for fuel. Thus an oil-burning ship's cargo
increased by 9 per cent. or 468 tons per voyage.

g the oil in double bottoms, which is standard practice,
deadweight capacity ship can carry 689 tons, or 27 per
cargo per trip than a coal burning ship of equal dead-

ices crew requirements.—Additional space is
the reduction of crew quarters, for from two-
three-fourths of the firemen and trimmers are
by the substitution of oil for coal. It was esti-
t had the Lusitania been changed to an oil-
r fireroom force would have been reduced 90
a reduction from about 300 men to 30. Two
nd seventy men need considerable space to
bathe, etc. What was planned for the Lusi-
ow being executed for the Mauretania.

or question is furthermore eased by the im-
kehold conditions. Intense heat, the gruelling
eeding and raking fires, the ash-covered deck
aden air are unavoidable concomitants of the
ut vanish when oil is used instead. All this
ve the morale of the crew in as far as it will
higher type of engineer and will eliminate
le less desirable elements from the roster al-

stion of crews is a vital one in these days of
l constant demands for higher wages. This
uid to have been instrumental in prompting so
panies to make the change.

s better speed results.—The speed is affected
ys. Coal-burning vessels lose a great deal of

their engine efficiency through the necessity of cleaning a goodly proportion of the furnace. A ship of the Mauretania type is supposed to lose about 10,000 out of her 68,000 horse-power every watch, through the cleaning of thirty-two of her one hundred and ninety-two fires. Incidentally, it may be mentioned that the machinery and power required for handling ashes is also saved.

Oil-burning vessels make from 10 to 20 per cent. more mileage than coal-burners, because of the better control of steaming. Fires can be started or stopped instantly, steam raised quickly, and fuel taken in more rapidly. President Teagle¹ of the Standard Oil Company of New Jersey tells of destroyers taking on fuel at the rate of 40,000 gallons an hour in mid-ocean. Sometimes bunkering is done while both the supply ship and the destroyer are traveling at six knots an hour.

Oil extends cruising radius.—The saving in space and weight may either be utilized in greater carrying capacity or else applied to increasing the radius of ship operation. Freight steamers could go almost half-way around the world if they chose to carry as much weight in oil as would fill the space which is usually allowed for coal. This has a twofold significance. Economically, it opens up vast possibilities in planning new and profitable voyages and in disclosing new trade routes which the handicap of coaling requirements had hidden before. Politically, it would mean the emancipation of American ships from the British control of the world's coaling stations, or at least it would mean a blow at British fuel monopoly.

There are still other advantages. Oil is often cheaper than coal, ton for ton, in actual money value, although

¹ See *Nautical Gazette*, December 27, 1919.

The general tendency is for oil and coal prices to run parallel.

Oil does not deteriorate in storage. The fire risk, due to spontaneous combustion, is eliminated. Oil does not shift in rough weather. Greater cleanliness reduces the painter's bill. The furnace repair bill is also reduced. Where fuel oil is used, boilers can be forced above their normal performances, thus affording increased speed.

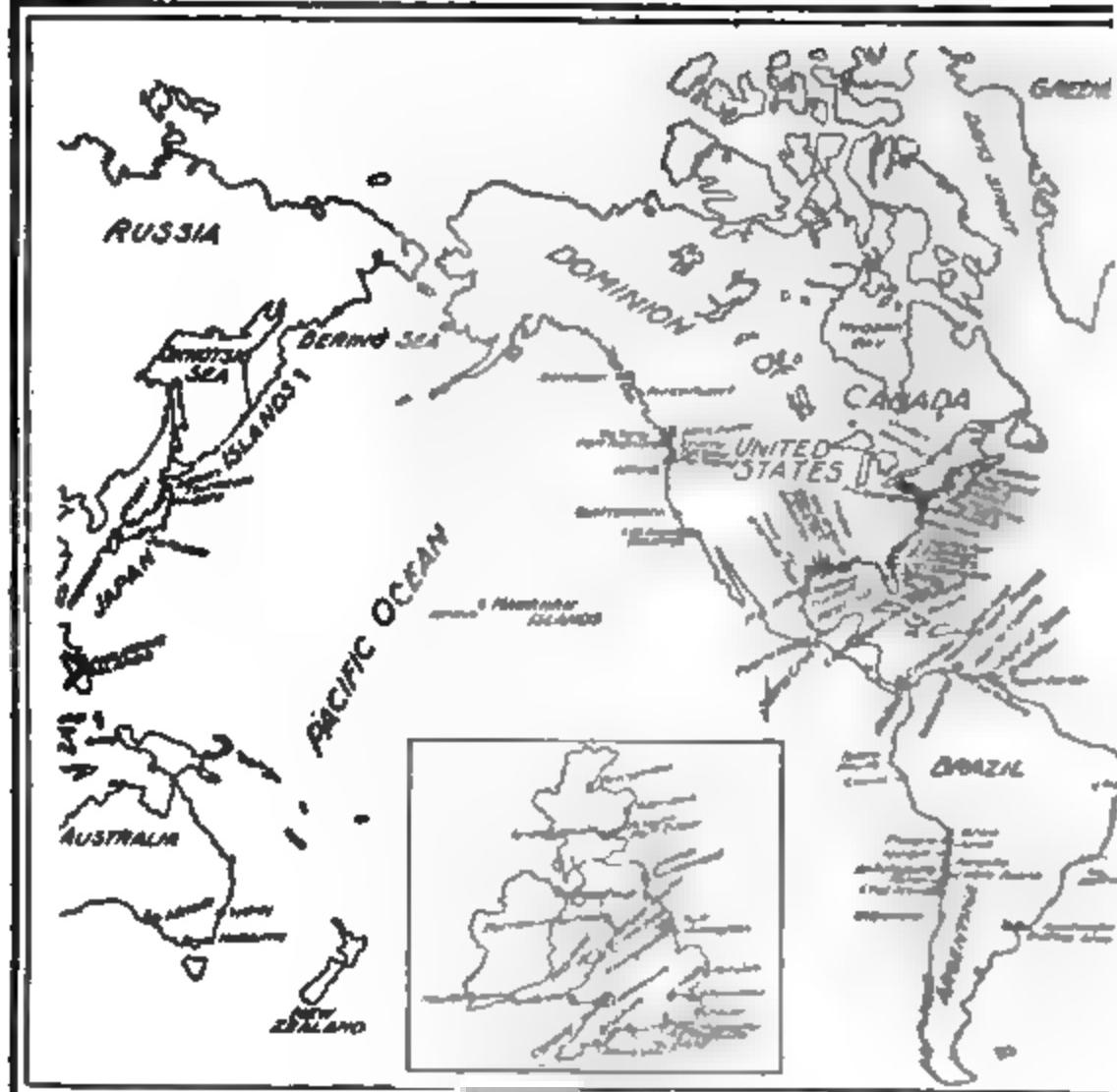
A network of oil bunkering stations is spread around the globe.—In view of this powerful array of inducements which oil holds out to tempt the shipowner and operator, the rapidity of the change does not seem surprising, especially if the proper weight is attached to the shortage and resulting rising price of coal as well as to the labor shortage and unrest. Rather more surprising is the fact that the oil industry has been able to keep pace with the requirements (the total requirements for the United States merchant marine alone have been estimated at 31 million barrels for 1919 and 66 million barrels for 1920). To the coaling stations that dot the trade lanes of the globe the fuel oil stations now have to be added.

What the United States Shipping Board has done in this respect was summed up by the Director of Operations, Captain Paul Foley,¹ as follows:

"The position as regards distribution is that in anticipation of the situation now confronting us, the Division of Operations have either erected or provided for the erection of stations at St. Thomas and Rio Janeiro; at St. Vincent, Bermuda, The Azores and Brest at Bizerta

¹ "The Bunkering Problem of the American Merchant Marine." Address delivered by Paul Foley, director of operations, United States Shipping Board, at the Marine Exposition, Grand Central Palace, New York, April 16, 1920.

Oil Bunkering Stations of the World, Includ



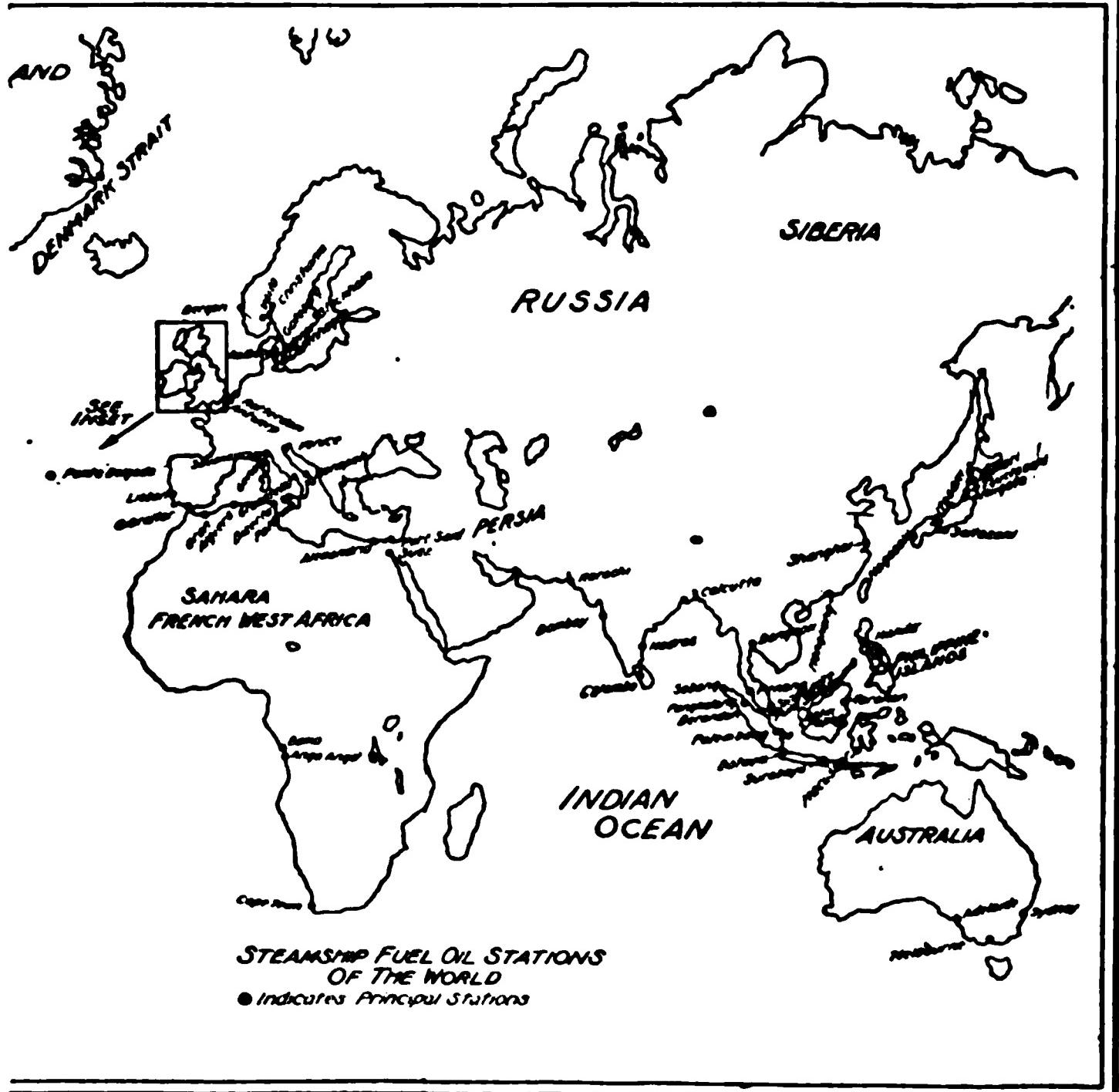
Courtesy *Marine Review*.

and Constantinople, at Colombo, Singapore, Manila and Shanghai, Durban, Sydney and Wellington, Honolulu and Panama.

"Having regard to the steaming radius of all ships the stations enumerated are sufficient in number to fully protect American Shipping on the trade routes of the world."

In addition, private corporations, especially the Stand-

ing Both Large and Small Centers of Supply



ard Oil Company, have established numerous oil stations under American control. The accompanying map shows the oil bunkering stations of the world according to latest information:

The Royal Dutch-Shell Petroleum Combination.— Among the foreign companies who are supplying ships with fuel oil, British concerns are naturally most conspicuous. We have previously mentioned the forma-

tion of the British-Mexican Petrol Company, through which British ship-owning companies are operating with E. L. Doheny, the American-Mexican oil king, in an endeavor to build oil stations along the trade routes of the world. But the biggest factor in the foreign world is the Royal Dutch Shell Transportation Company, a Dutch-English combine which, through the Bataafsche Petroleum Company, carries on production in the Dutch Indies, Rumania, Russia, Egypt, Sarawak, the United States (Oklahoma, California and Texas), Mexico, Venezuela, and other countries. In Russia, this company joined forces with the de Rothschild (Paris) group, and in Mexico, according to recent reports, bought out Lord Cowdray's interest in the Mexican oil-field, which was represented by the "Compania de Petroleo El Aguila" (Mexican Eagle Oil Company). The latter possesses many properties, extensions, transport and refining facilities in Mexico and also a selling organization (the Anglo-Mexican Petroleum Company, Ltd.) with a fleet of tank-steamers controlled by the Eagle Oil Company. One of the most important fuel stations of the Royal Dutch Shell group is the Dutch Island of Curacao, in the Caribbean, not far from the coast of Venezuela and favorably situated in respect to the Panama Canal. It is called the "Hongkong of the Caribbean." Here one of the largest refineries in the world has been erected, drawing its raw material from the Maracaibo field in Venezuela. Ocean ships may literally look in at its front door, and recently the price of oil was said to be seventy-five cents a barrel cheaper than at Panama, and forty cents a barrel cheaper than in the United States. The Shell Group also acts as the selling organization of the Anglo-Persian Oil Company, controlled by the Burmah

Oil Company, a controlling share of whose working stock is said to be held by the British Government.¹

The world's tank fleet.—But the bunkering stations have to be supplied with fuel oil, which calls for a fleet of tankers—tank steamers, tank barges, etc. The demand for liquid marine fuel grew too rapidly for the builders of tank ships. Consequently, during the war, many ships carried oil as freight in their double bottoms. The present tank tonnage of the world amounts to over three and a half million tons. Its growth is rapid. The program of the Shipping Board alone, according to the *Third Annual Report*, embraces 139 tankers of 1,316,630 deadweight tons. To these must be added a long fleet, delivered and building, for private account. The number will be the larger as the Shipping Board has decided not to sell any of its tankers, because it needs them all to supply its own fleet. When the year 1921 opened there were under construction throughout the world, 169 tank steamers of an aggregate gross tonnage of 1,169,003 of which 88 of 637,100 tons were building in the United States.

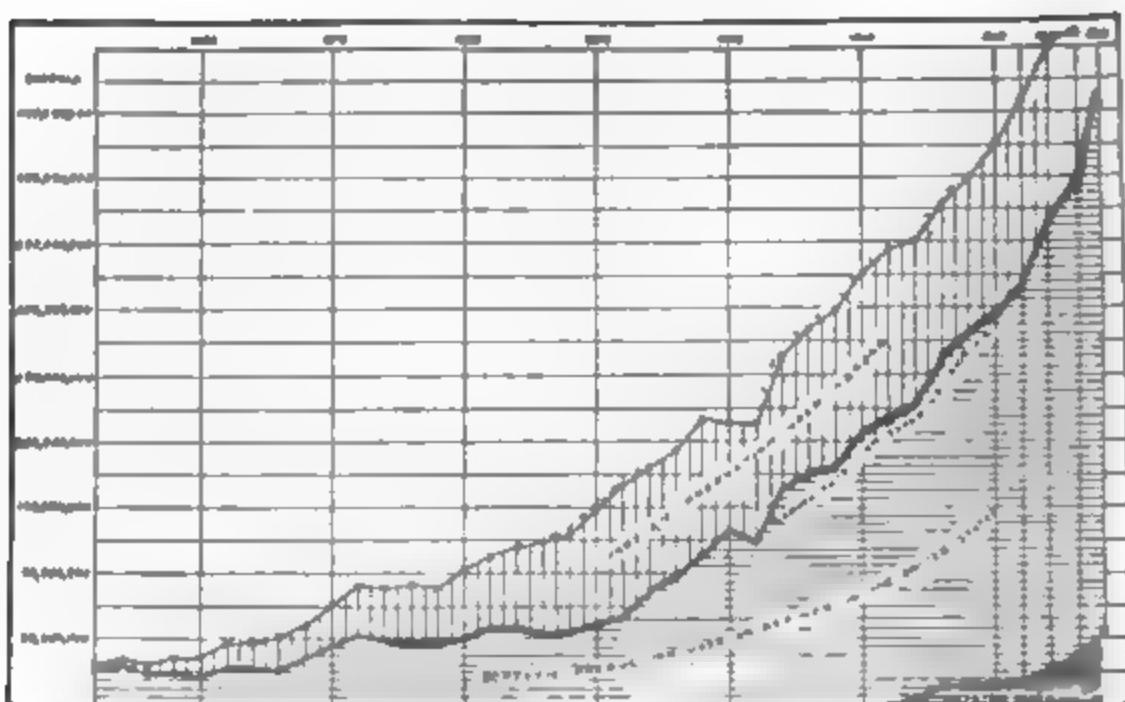
The essentials of world petroleum production.—But to fill these storage tanks, scattered throughout the world, with fuel oil, and to provide the fleet of tankers with their cargo, ever increasing production is necessary. This brings us to the crux of the matter; the most essential factor in the whole question, namely, that of the certainty or uncertainty of future supply. It is this problem which puts the one "but" into an otherwise satisfactory situation.

The facts summed up are these: for sixty years—except from 1898 to 1901, when Russia reached the peak

¹ The data concerning the various oil companies were compiled from current numbers of shipping and oil magazines.

of her vast petroleum production—the United States has led the rest of the world with its steadily increasing flow of oil. During this period the United States has supplied 61 per cent. of the world's oil. But so fast has the consumption risen that even this country has begun to import oil, particularly from Mexico. The following chart illustrates our statements:

CHART SHOWING PETROLEUM USED IN THE UNITED STATES AND THE REST OF THE WORLD FROM 1880 TO 1917¹



Data from U. S. Geological Survey.

Lines extended by the author from 1917 to 1919 on basis of latest available data

Mr. Paul Foley, in the above-mentioned address, summed up the situation as follows:

"The essential facts as regards production are first, that whereas 65 per cent of the current petroleum production of the world is being

¹C. G. Gilbert and Joseph E. Payne, "The Energy Resources of the United States, A Field for Reconstruction," *Smithsonian Institution Bulletin*, 102, Vol. I, 1919.

n from the United States, practically all of the visible future production of the world is under the control of Great Britain; second, whereas the production in the United States is available to all nations on equal terms with our own, that under the control of Great Britain and located in the middle area of the world is available only to British nationals. American citizens were excluded from the Burmah producing fields in the year 1884 pursuant to an agreement signed by Queen Victoria and the principle then established has been consistently followed as new fields have been developed. The practical effect of these restrictions is that while British ships can bunker in the ports of the United States and the Caribbean on equal terms with American ships, and British requirements overseas are supplied from the nearest producing center, American requirements overseas can only be obtained at British terms and all must reflect a long haul from the American and Mexican seaboads. Unless corrected the consequences of the handicap must sooner or later prove fatal."

HENOMENAL INCREASE IN DEMAND FOR OIL.—What causes the tremendous demand for oil? To give just one example: with more than six million pleasure automobiles operating in the United States alone, we have an annual consumption estimated by the officials of the most company manufacturing high-grade lubricants at one hundred and twenty million gallons of lubricating oil, whereas twenty years ago the demand for this purpose was practically nothing. Add to this thirty-five and one-half million gallons of lubricating oil used in motor trucks, which requirement may double in the next few years. Tractors consume another thirty-five million gallons, giving a total of fully two hundred million gallons of lubricating oil alone.¹ This is merely one phase of the question. The Sinclair Oil Company estimates that "more than 860,000,000 barrels of fuel oil could be absorbed annually by the potentially available

able fuel oil market. This would call for a crude oil production of about 1,700,000,000 barrels annually, or more than three times the world's present supply. Furthermore, it is said that if a third of the world's ocean tonnage were to-day burning oil instead of coal as a fuel there would be consumed not less than 160,000,000 barrels of fuel oil annually. How stupendous this figure is can be realized by the fact that the amount named is about two and a half times the crude oil production of Mexico. In rough terms it is estimated that 1,000,000 gross tons of ships consume more than 10,000,000 barrels of fuel oil in a year."

Shipping adds greatly to this demand.—Thus the new demand of our shipping program alone is estimated by George Otis Smith, Director of the United States Geological Survey,¹ to involve fuel oil in quantities equivalent to nearly one-half of the present domestic output; and unless there is a corresponding decrease in other demands, this new requirement must be met with an increase of nearly 200,000,000 barrels in production. It is of special interest to see what Mr. E. N. Hurley, late Chairman of the U. S. Shipping Board, says on this subject, since he was largely responsible for putting so many of our ships on an oil basis:

"If the world should turn during the next ten years from coal to fuel oil, and from steam to the motor ship, the question of petroleum supplies will become important.

"At present the largest marine consumption of petroleum in the world is probably that of the United States Navy, estimated at 5,000,000 barrels yearly under war conditions. This quantity would not go far in op-

¹ *Annalist*, February 23, 1920.

an American merchant marine of 25,000,000 tons. On which to figure consumption for such a fleet, does of passenger and cargo ships running at various speeds and in various classes of service, are not ample. But engineers have adopted a roughly ratio, estimating one ton of oil yearly to a dead-weight shipping, where the fuel burned is one ton, and half a ton yearly for motor ships.

On this basis the American merchant marine alone would require 150,000,000 barrels yearly for steam, or 30 barrels for motor ships. The world's ocean tonnage was 50,000,000 tons before the war, and under improvement and cheapening in transportation, possible through petroleum, might increase to 75,000,000 tons within the next five or ten years, this estimate excluding our own merchant marine.

"For 75,000,000 tons of motor ships there would be required yearly somewhere between 200,000,000 and 300 barrels of crude oil. This is approximately the world's total present production, and more than per cent of our own production."¹ One would naturally reckon with a considerably larger amount if motor tonnage is partly substituted for steam tonnage.

Industries put on oil basis.—But ships are not the only claimants to the world's oil. We now read that all oil industries are to be put on an oil basis. This is prominent in this respect, as appears from the following: "The problem of substituting fuel oil for coal is one of the most important which confronts the oil industry. In many cases, the substitution has been the result of the insistence of the Minister of Industry. "When Coal Oil Johnny goes to Sea."

dustrial Reconstruction. To-day it is about to be carried out on a vast scale. The Commissioner General of Fuel Oils and Combustibles has established a program for the progressive transformation of furnaces and machinery from coal to oil-consuming. This program is already being carried out.

"Recent experiments made with railway locomotives prove that they can burn petrol with excellent results. The Paris-Lyons-Mediterranean Railway has made operative a program which calls for the monthly use of 1,500 cubic meters of mazout, starting with the first of the year. This quantity is to be increased progressively until it attains 5,500 tons per month by the end of the year. In 1921, consumption will be 15,000 cubic meters per month.

"The Minister of Public Works and the Commissioner General of Petrol have examined closely the proposal to construct a pipe line from Havre to Paris to furnish mazout to the latter city. American engineers, specialists in pipe-line construction and petrol transportation, have been called in consultation."

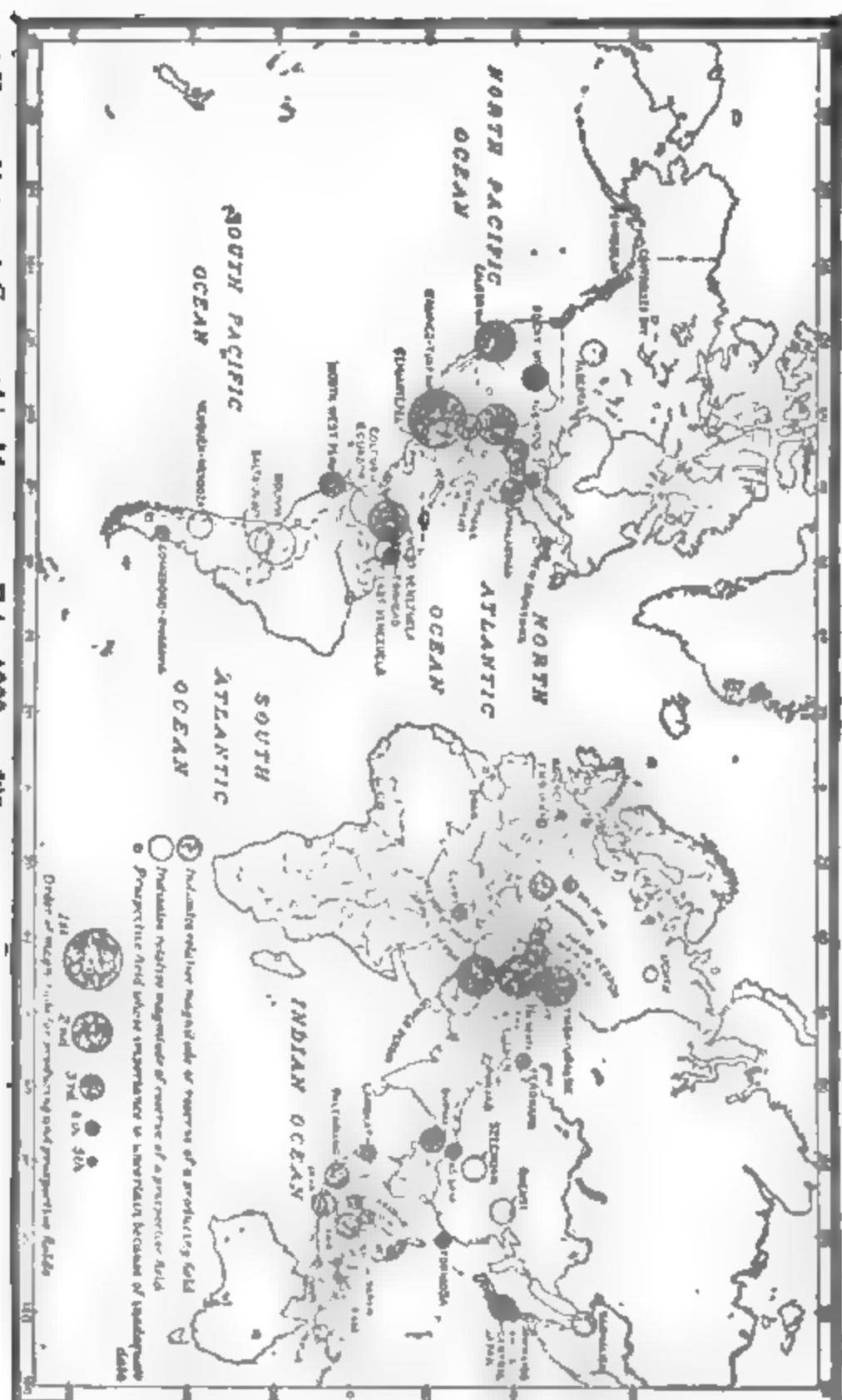
Similar reports come from Italy and other countries¹ of meagre or no coal resources. So the future demand for oil is bound to grow rapidly. What about the supply?

The world's petroleum reserve.—Our estimated unrecovred underground reserve of about six and one-half billion barrels, as now available, is far less impressive when we realize how fast we are using it up, and that while we have burned and wasted less than 1 per cent. of the coal resources of the United States in the last

¹ Guaranty Trust Company of New York. "American Goods and Foreign Markets" (Weekly Letter) February 16, 1920.

KNOWN AND POSSIBLE OIL RESOURCES OF THE WORLD¹

THE BUNKERING PROBLEM



one hundred years, we have apparently used up 40 per cent. of our available oil supply in only sixty years.

A glance at the map shows that outside of the United States the great oil supplies of the earth, so far as now known, are mainly centralized in the Near East, in South America and in Mexico.

In general the regions first developed and drawn upon most heavily are, of course, likely to be soonest exhausted. Therefore, it is practically certain that as the oil resources of the United States and Rumania diminish and the wells of Mexico also yield under the pressure of rapidly increasing exploitation, the world will have to look for its oil supplies to regions where inaccessibility and lack of demand have so far retarded development. It is possible that eventually considerable supplies may be discovered in the Near East, and that temporary relief will be granted to a limited extent by the Oil Leasing Bill which Congress has just passed. It also is possible, perhaps even probable, that more economical methods of production will relieve the present strain.

Possible substitutes for petroleum.—Optimists look to the oil shale of Colorado, Wyoming, etc., to save the situation in the future. But as Mr. M. L. Requa, Vice-President of the Sinclair Oil Company, so clearly pointed out, to work the shale land on an adequate scale would require an army of workmen which would rival the hosts of a coal mine.

Then again the chemists promise that oil will be obtained from coal. But that, too, will require huge additional working forces, increased coal output, etc., not to mention the question of cost.

America's future as a maritime nation requires our participation in world oil exploitation.—The only safety for the future oil supply as far as this country is concerned, lies in a vigorous participation of American capital backed by a far-sighted and unprejudiced government in the exploitation of foreign fields. The experience of Mr. Doheny having to turn to London after his own country refused co-operation, must not be repeated. The seriousness of the situation was brought out in a letter written to Dr. Garfield by Mr. M. L. Requa. The letter¹ follows:

FEBRUARY 28, 1919.

Dr. H. A. GARFIELD,

United States Fuel Administrator, Washington, D. C.

DEAR SIR: Following a conference in which the petroleum problem was considered in detail, we have agreed upon the following statement of fact as representing an accurate picture of the petroleum problem as we see it:

1. The rapidly growing use of internal combustion engines, as well as of fuel oil on ships, both naval and merchant, inevitably means a more rapid increase in the consumption of petroleum in the future than in the past.
2. The enormous increase in world consumption in recent years has been coincident with the increasing difficulty of production in the United States, due to much greater depth necessary to drill in order to reach the oil-bearing horizon.
3. Careful calculations based upon data of the United States Geographical Survey indicate the probability that 40 per cent. of the available oil of the United States has already been exhausted, whereas less than 1 per cent of the coal has been mined.
4. The United States produces, consumes, and exports nearly 70 per cent. of the annual world production of petroleum, and has therefore industrially and commercially more at stake than any other nation.
5. The success of the United States Shipping Board program is dependent in largest part upon the use of fuel oil.

¹ *Congressional Record*, July 29, 1919, p. 3519.

6. In view of the enormous expansion in consumption in the recent past and immediate future, it is absolutely necessary, in order that the situation may be thoroughly safeguarded, that American interests be encouraged by sympathetic Government cooperation in acquiring additional foreign sources of supply and by protection of properties already acquired.

7. American oil companies are seriously handicapped in their ability to compete throughout the world with the Shell-Royal Dutch combine, and if the combination now under discussion in England becomes an accomplished fact, American interests will be still further handicapped.

8. The review of domestic conditions as set forth in the pamphlet entitled "Petroleum Resources of the United States," written by M. L. Requa, in 1916, has been proved to be a conservative statement of conditions. The arguments made at that time are even more acutely applicable at present.

9. The memorandum entitled "The World's Problem of Petroleum," prepared by Mr. Requa in September, 1918, is, we believe, a conservative presentation of the international situation, and the plan suggested therein is the only practical solution.

10. We are not unmindful of the oil shale resources of the United States. The cost, however, of producing oil from this source is so much greater than the cost of producing petroleum from oil wells that it can not become a commercial proposition until prices are much above those now prevailing.

11. We can not too strongly urge some immediate Government action that will guarantee the continuance in American ownership of American oil companies, and by proper legislation make foreign control of these companies impossible.

12. We urge that Government cooperation with existing companies be agreed upon, which will guarantee the requirements of the Navy and the Shipping Board at satisfactory prices wherever delivery is made throughout the world.

13. American geologists, petroleum engineers, and drillers have led the way in developing the majority of the oil fields of the world, but these men have in large degree been in the employment of foreign capital. American capital should be encouraged to use this technical skill now forced to seek employment under foreign flags and to serve foreign interests.

14. The passage of the oil-leasing bill has been taken into consideration, and we desire to point out that all estimates made have included all withdrawn lands. Failure to drill these lands will render the situation more acute than above outlined.

We are impressed with the seriousness of the efforts being made by the British and Dutch interests to dominate the petroleum supply of the world. The United States now commands the premier position by reason of its domestic production, which even now exceeds one-third billion barrels per year, with less than 7,000,000,000 barrels estimated reserves (20 years life). This position of our country can and should be safeguarded and rendered secure by the Government giving moral support to every proper effort of American capital to make its circle of activity in oil production coextensive with the new expansion of American shipping. This means a world-wide exploration, development, and producing petroleum company, financed with American capital, guided by American engineering, and supervised in its international relations by the United States Government. In its foreign expansion American business needs this governmental partnership, and through it the interests of the public can best be safeguarded.

M. L. REQUA,
General Director Oil Division,
United States Fuel Administration.

VAN. H. MANNING,
Director Bureau of Mines.
GEORGE OTIS SMITH,

Director United States Geological Survey.

From the foregoing it appears that a proper solution of the oil question is a vital one, for the future economic peace of the world, and for a sound development of world shipping in particular. The crisis has not yet been reached. As President Teagle, of the Standard Oil Company of New Jersey, said:

"As for fears lest the production of crude petroleum may not keep pace with these demands for oil fuel for marine use, it should be borne in mind that Mexico, with potential production estimated at 450,000,000 barrels of

crude oil a year, has been shipping but 75,000,000 barrels, or less than 17 per cent. of her possible supply." Not everybody will view with absolute equanimity a development which makes this country dependent upon another nation's natural wealth. For, a refusal on the part of that nation to permit unlimited exportation or unrestricted exploitation by foreign interests may result in unpleasant complications.

Undoubtedly, the transition from coal to oil in marine propulsion has been too rapid. Reconversion to a coal-burning basis has happened and Lord Pirrie, head of Harlan and Wolff, Belfast, after a recent tour of inspection through the Mexican oil-fields, expressed serious concern for the future of oil-burning ships. On November 10, 1920, he spoke as follows:

"I have held strong views for the last 10 or 15 years that it is a wrong principle to burn oil merely as fuel. At the same time, the Diesel engine will require great care in manufacture as well as developing slowly. Personally I feel so concerned after having recommended so many of my shipowning friends to convert for oil-fuel consumption, which undoubtedly is a most extravagant way of using such a valuable commodity, and I fear that only such vessels as the Olympic, Aquitania and a few other similar express passenger liners will be secure for future oil supplies, and am therefore advising friends to stop converting ordinary cargo vessels.

"Until Mexico gets into a more settled state my feeling is that there is great insecurity in going in for too large a program of vessels built for oil-fuel consumption, more particularly as at present we are relying to a large extent on the production of the Mexican oil-fields.

The oil question, even more than the coal question, is what the great English economist, W. S. Jevons, in his remarkable treatise, "The Coal Question," describes as one "of almost religious importance which needs the separate study and determination of every intelligent person." Our attitude towards its proper solution will largely depend on our entire philosophic outlook upon life.

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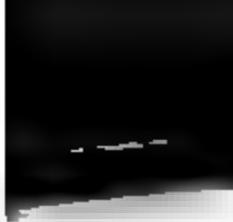
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PART IV
THE CARGO



CHAPTER XI

CARGO AND CARRYING CAPACITY

Weight of world's seaborne trade.—No organism can be understood unless its functions are understood. The function of world shipping is to carry the seaborne trade of all countries. Therefore, a discussion of the cargo, its nature and volume is imperative.¹

The first question to be answered is: What is the total volume or the aggregate tonnage of the commodities shipped from one country to another? In other words, what is the total weight of the world's seaborne trade? One does not have to be a statistician to realize the difficulties which render an accurate answer to this important question well nigh impossible. It is fortunate, therefore, that so eminent an authority as the "*Departmental Committee appointed by the British Board of Trade to consider the position of the Shipping and Shipbuilding Industries After the War,*" whose chairman was Alfred Booth, the directing genius of the Cunard Line, has ventured an estimate based upon all data available. According to this authority, the total weight carried by seagoing vessels plying between the different countries of the world, averages 250 to 300 million tons a year. This approximation refers to the days when the war had not yet disarranged the mechanism of international trade.

¹ We shall reserve the discussion of passenger traffic for a later chapter and confine ourselves here to an analysis of the freight business.

OCEAN SHIPPING

Comparison with other weight statistics.—Such a figure means little to the average person and gains significance only by comparison with similar figures. We shall compare it first with the total weights of the commodities produced in the United States. The Shipping Board, through its statistical division, has compiled tables giving the weight of the most important agricultural and mineral products of the United States for the year 1917. These figures show a total of a little less than a billion and a half tons. Careful production figures have been compiled by leading economists such as Day, Stewart, Kemmerer and King. Mr. Herbert Hoover, Secretary of Commerce, in an article which appeared in the *Saturday Evening Post* on April 12, 1920 gives the following table which covers the great bulk of our products, namely, agricultural products, mineral coal, salt, cement, lumber and the products of manufacture.

	Production in Tons
1917	1,081,293,417
1916	1,019,018,207
1915	1,073,472,988
1914	1,162,489,530
1913	1,241,173,806
1912	1,247,787,883
1911	1,117,181,233

These results are shown by transportation return statistics. These statistics tell us that, after eliminating a certain amount, the total weight of freight carried by the railroads in the United States is, approximately, 1,100,000,000 tons. While it is true that this country produces more than half of the world's total output of many basic products nevertheless, all things considered, the world's production of the principal agricultural and mineral

commodities is probably a multiple of the figures given for the United States. We see, therefore, that in spite of the unprecedented development of ocean navigation which has marked the last one hundred years, and in spite of the fact that many necessities of life are to-day moved by water from their place of origin to distant lands, only a relatively small percentage of the world's total production enters into seaborne trade. Nevertheless, the seaborne trade of to-day is enormous.

Weight of seaborne trade by countries.—Among the commercial nations, the United Kingdom supplies the most satisfactory statistics of seaborne exports and imports. One reason is the fact that in this case total trade and seaborne trade are identical. British foreign trade during selected years showed the following weight totals:

**WEIGHT OF FOREIGN TRADE OF THE UNITED KINGDOM
IN MILLION NET TONS**

Calendar Year	Exports	Imports
1913	87.7	59.3
1917	45.4	35.8
1919	46.2	41.5

After careful consideration of all data available to us, we believe the following to represent fairly closely the weight balance of our own seaborne foreign trade:

**WEIGHT OF SEABORNE FOREIGN TRADE OF THE
UNITED STATES IN MILLION GROSS TONS**

Fiscal Year	Exports	Imports
1914	30.9	21.1
1918	34.4	20.6
1920	38.6	34.2

For further purposes of comparison we give in the following table the amount of freight moved in American-owned ships in both coastwise and overseas service:¹

FREIGHT SHIPPED BY COMMODITIES AND BY DIVISIONS

COMMODITY.	Total	Atlantic Coast and Gulf of Mexico.	Pacific Coast (including Alaska).	Great Lakes and St. Lawrence River	Mississippi River and Its Tributaries	All other Inland Water
Total tons	268,002,611	80,259,375	21,853,985	125,384,042	27,962,583	2,542,501
Canned Goods tons	951,790	535,372	336,007	14,951	72,830	1,000
Cement, brick and lime, tons	2,961,828	2,850,779	206,358	199,912	175,734	17,964
Coal tons	68,548,575	23,248,105	270,949	30,179,847	13,916,013	629,301
Cotton tons	927,039	741,400	4,500	46	180,563	0
Flour tons	1,718,462	232,127	298,629	1,065,290	99,511	2,300
Fruit and Vegetables tons	2,343,506	1,613,586	481,600	117,906	119,297	11,119
Oats tons	8,076,313	863,378	546,042	5,969,821	617,946	56,435
Ice tons	1,032,966	941,648	878	5,895	14,302	76,345
Iron ore tons	73,457,237	344,968	10,228	72,614,761	470,460	16,371
Lumber tons	11,606,735	5,090,916	3,184,786	1,629,758	744,673	0
M. fert. . . . M. fert.	6,633,244	2,968,023	1,996,750	1,001,898	344,203	112,199
Naval stores tons	453,400	416,360	16,264	8	18,515	2,315
Petroleum and other oils tons	18,619,925	10,358,849	7,699,115	214,859	246,930	1,972
bbls.	100,147,700	58,970,191	46,856,072	1,962,150	1,553,978	8,418
Phosphate and fertiliser tons	1,385,456	1,279,937	33,680	68,458	3,381	0
Pig iron and steel rails tons	1,326,960	718,734	142,770	184,188	255,615	26,673
Stone, sand, etc tons	18,478,563	6,718,929	1,638,685	7,506,482	1,710,857	908,946
Tobacco tons	227,403	140,226	8,188	8,584	75,203	12
Miscellaneous merchandise tons	45,995,463	23,875,061	8,983,111	5,556,967	9,176,354	602,971

¹ All tons of 2,000 pounds.

² Does not include 80,948 tons of freight carried on fishing vessels.

Tonnage required to haul seaborne trade.—The next question refers to the number of ships which are required to move these 250 or 300 million tons across the seven seas. The answer to this question depends in the first place upon the ship's space required to carry a unit—say a ton—of a given commodity, secondly, upon the length of the haul, that is, the distance between the points of origin of shipments and the points of destina-

¹ *Transportation by Water—1916*, Bureau of the Census, Washington, 1920.

tion and, finally, upon the speed of the ships. The last two factors in the main determine the number of turn-arounds which a ship can accomplish within the course of a year, although this item is also affected, and at times like the present, even vitally so by the length of the average stay in port. Of course, there are many other influences which come into play and make a mathematical solution of this problem impossible. We mention only the most important: ships are frequently not loaded to capacity; they often perform part of their voyage altogether in ballast; and passenger trade interferes in varying degrees with the full utilization of the available space.

Apart from these modifications the main facts of the situation are these; before the war, the merchant marines of the world aggregated, approximately, 50 million tons gross or approximately, 35 million tons net. These ships in the course of the fiscal year 1911-1912,—the only year for which such an estimate has been compiled,—made a sufficient number of voyages to bring the sum total of entrances of vessels, with cargoes and in ballast, at the ports of all countries, to 570 million tons net. Unfortunately, the fact that many steamers call at intervening ports makes the reliable calculation of the average number of turn-arounds, or the average haul, impossible.

Elements of ship measurement.—More definite information is available regarding the other factor,—namely, the respective tonnage requirements of different commodities. Before this subject is approached, it is important that the terminology used in determining ship capacity and cargo measurement be understood, and for that purpose we will begin with an explanation of the meaning of the term "ton" as a weight and measurement unit.

Early tonnage calculations.—An interesting account of the early history of tonnage calculations appeared in a recent issue of the *Nautical Gazette*.

"Writing in the March number of United States Naval Institute Proceedings, Lieutenant Commander Carl H. Hermance says that the term tonnage appears to have originated from the tun, cask of wine, the earliest system of measuring vessels being simply to count the number of casks or tuns of wine which could be carried and thus obtaining a measure of the internal capacity. In the reign of Henry V, A. D. 1422, the first act dealing with the measurement of vessels of which any record can be found, required "Keels that carry coals at New-castle to be measured and marked."

"The 'keels' were marked by nails upon the bulkheads at each end of the cargo space, or by driving nails into the stem and stern-post to indicate the corresponding load draft. In the year 1694 another act of the British Parliament was passed for the measurement of keels, and a weight was then fixed upon as a standard instead of a measure. This act required 'keels' to be measured by putting into them deadweights of iron or lead, allowing 53 hundredweights to every chaldron of coals, and a maximum load of 10 chaldrons or $26\frac{1}{2}$ tons. The load-line was then marked on the stem, stern and each side amidships.

"The measurement of ships, as distinct from the rough estimates of tonnage which are found in early records, appears to date from the first part of the 17th century.

"In 1720 a rule for the measurement of vessels, which was ultimately known as builders' tonnage, was first legalized in an act intended to prevent smuggling, by prohibiting small vessels of 30 tons burden and under from carrying spirits.

"In 1773 a general rule, which came to be known as the builders' old measurement rule, for the measurement of all merchant vessels was made by Act 13 George III, and this, with some slight modifications, continued in force until 1835, and had a most evil effect upon naval architecture.

"As the register tonnage is that upon which a vessel has to pay dock and other dues, while the deadweight carrying capacity repre-

sents the earning power of an ordinary cargo vessel, it is obvious that from a shipowner's point of view the most profitable vessel is the one which can carry the greatest amount of cargo in relation to her register tonnage.

"The method of estimating the official tonnage known as the builders' old measurement rule, in which the square of the breadth entered into the calculations, while the depth was neglected, fostered forms, so as to produce a larger carrying power with a comparatively small official tonnage. This resulted in the construction of unhandy box vessels, which were positively dangerous from their liability to capsize.

"The modern tonnage laws aim at ascertaining accurately the internal capacity of a vessel, hence there is not now the same inducement to build such badly proportioned ships."

To-day there are three ways of applying the word ton to a ship, differentiated as: displacement ton, deadweight ton and registered ton, the last named being subdivided into: gross ton and net ton.

Displacement tonnage.—The displacement tonnage indicates the weight of the vessel and is, therefore, according to a well known principle of physics, equal to the weight of the water it displaces. We distinguish between the vessel's displacement "light" and displacement "loaded". The former indicates only the weight of the vessel together with the weight of a normal crew and adequate supplies. The displacement "loaded" includes the weight of the cargo and bunkers i. e., coal or fuel oil. The ratio of this capacity to the weight of the ship itself differs according to the hull construction. In order to show the carrying capacity at each successive foot or inch that, with increasing load, the ship is further submerged, a so-called displacement curve and scale is prepared. Displacement tons may number either 2,240 or 2,204.62 pounds avoirdupois, according to wheth-

er the English or the metric system of measurement is used.

Deadweight carrying capacity.—The difference between the displacement "light" and the displacement "loaded" indicates the maximum carrying capacity of a ship, and is also known as its deadweight tonnage. This deadweight tonnage is therefore measured by the same unit as displacement tonnage, namely, a ton of either 2,240 or 2,204.62 pounds avoirdupois. A ship has a different deadweight capacity for coal than for cotton because of the difference in the specific weight of these commodities. This term is not ordinarily applied to passenger or to combination passenger and freight ships, but usually serves as the basis of chartering pure cargo vessels engaged under a time charter.

Registered tonnage.—The third class of ship tonnage is the registered tonnage, which gives the cubic contents of the space in a ship, as defined by rules adopted by the different governments of the sea-faring nations, or by the rules of such companies as the Suez Canal Company. This space is measured in tons of 100 cubic feet, a unit proposed in 1852 to the British Government by Mr. George Moorsom, and first incorporated in the British measurement law of 1864 and since then adopted by the leading maritime nations of the world. The United States, for instance, adopted the Moorsom rule in 1864. According to the national gross tonnage rules of the United States, as interpreted by the Commissioner of Navigation, the following spaces are exempted from measurement:

"(1) Sheltered places or superstructures with openings at the sides or ends. This exemption was the result of the way in which the rules were interpreted by the

United States Commissioner of Navigation on September 5, 1914.

"(2) So-called shelter-deck spaces, i. e., spaces beneath a 'shelter deck' with approved 'tonnage openings.' This exemption was not allowed prior to March 16, 1915, and is also the result of the interpretation of the national measurement rules by the Commissioner of Navigation. Both of these exemptions had for many years been granted under the measurement rules of Great Britain, and had also been accepted in Germany since 1895, when the endeavor to induce Great Britain to measure all enclosed superstructures and shelter-deck spaces was abandoned. .

"(3) Passenger accommodations in tiers of superstructures over the first tier above the upper deck.

"(4) Hatchways up to one-half of 1 per cent of the vessel's gross tonnage.

"(5) Galleys, bakeries, toilets and bath houses above decks.

"(6) Spaces above decks occupied by the ship's machinery or for the working of the vessel.

"(7) Light and air and funnel space over the engine and boiler room to the extent that such space is above the upper deck, or the shelter deck, when special request is made by the shipowner to have the space measured.

"(8) Domes and skylights and companionways (except portion used as a smoking room), and ladders and stairways located in exempted spaces.

"(9) Double bottoms for water ballast since March 2, 1895, and other spaces adapted only for water ballast since February 6, 1909.

"(10) Open spaces occupied by deck loads."¹

¹ Johnson and Huebner, *Principles of Ocean Transportation*, pp. 115, 116.

Gross and net Registered tonnage.—Because of these deductions, gross registered tonnage does not indicate the real gross capacity of a vessel. The same holds true of the net registered tonnage, which is calculated by deducting from the gross tonnage the cubic contents of certain spaces. Under the national measurements rule of the United States these spaces are as follows:

“(1) Spaces occupied by the propelling machinery and fuel.

“(2) Spaces occupied by or appropriated to the use of the crew, officers and master, subject to the navigation laws, which specify that a minimum crew space varying from 72 to 120 cubic feet and from 12 to 16 square feet of floor space per man must be provided on American vessels.

“(3) Spaces used exclusively for the working of the helm, capstan and anchor gear, unless they are located above decks and consequently have been excluded from gross tonnage.

“(4) Spaces used for keeping charts, signals, and other instruments of navigation.

“(5) Spaces occupied by the donkey engine and boiler if located below decks and connected with the main pumps of the vessel.

“(6) Spaces required for boatswain’s stores.

“(7) Galleys, bakeries, toilets and bath rooms for the accommodation of officers and crew, when situated below decks.

“(8) Spaces on sailing vessels used for the storing of sails not exceeding 2½ per cent of the gross tonnage.”¹

¹ Ibid, p. 119.

Various tonnage calculations.—The fact is that neither the gross nor the net registered tonnage gives a true picture of the ship's capacity. When, therefore, the Suez Canal Company, and later the Administration of the Panama Canal, determined to make the net registered ton the basis for the calculation of tolls to be charged, a new set of rules was adopted which does not differ materially in the case of the two great inter-oceanic canals, and it is to be hoped that some day an international agreement will be reached towards establishing a uniform system throughout the world. The following table indicates the degree of difference existing at present between the several tonnage calculations outlined above:

COMPARATIVE TONNAGE STATEMENT¹

VESSEL	British Register Tonnage		American Register Tonnage		Panama Tonnage		Suez Tonnage	
	Gross	Net	Gross	Net	Gross	Net	Gross	Net
Kentuckian.....	6,515	4,086	6,582	4,084	7,041	4,891	6,569	4,875
Santa Rosalia....	5,409	3,488	5,834	4,392	5,865	4,530	5,580	4,452
Kirkdale.....	4,732	3,047	5,352	3,469	5,359	4,011	5,101	3,929

It will be noted that in each case the Panama Canal Tonnage is the highest figure with either Suez tonnage or American Register tonnage second.

¹ Adapted from Johnson & Huebner, op. cit. p. 123.

Cargo, weight, and measurement tons.—Now, when we come to the measurement of cargo we find that the same division into measurements of weight, and measurements of volume or cubic contents is found. The weight ton of the cargo is the same as the displacement ton and the deadweight ton in the case of a ship, but the measurement ton of cargo is only 40 cubic feet as

compared with 100 in the case of the ship. The result is that $2\frac{1}{2}$ measurement tons of cargo will fit into 1 registered ton, ship measurement. It is for this reason that, frequently, the deadweight capacity of a ship is calculated at $2\frac{1}{2}$ times the figure of its net registered tonnage.

"For a modern freight steamer the following relative tonnage figures would ordinarily be approximately correct:

Net tonnage	5,250
Gross Tonnage	6,850
Dead-weight carrying capacity	10,000
Displacement, loaded, about	13,350 ¹

We are now able to resume our discussion of the tonnage requirements of different commodities. When the ship is about to be loaded with a certain commodity the most important figure which the ship-owner or ship-agent has to know is the stowage factor, that is, the figure which represents the number of cubic feet of cargo space in which a long ton, (2,240 pounds) may be stowed. It is customary in shipping practice to quote freight rates on the basis of "weight or measurement, ship's option," that is to say, if the cargo measures more than it weighs, the freight charge is calculated on the basis of cubic feet; if it weighs more than it measures—on the basis of pounds or weight tons. A commodity weighs more than it measures if it weighs more than 56 pounds per cubic foot, the figure 56 being arrived at, by dividing 2,240 (the number of pounds in the cargo weight ton) by 40 (the number of cubic feet in a cargo measurement ton). It was the assumption that the average weight per cubic foot of all commodities was

¹ From E. N. Hurley, *The New Merchant Marine*, 1920, p. 276.

56 pounds, which led to the adoption of a cargo measurement ton of 40 cubic feet. Another explanation is that 40 cubic feet was made the standard, because this happened to be the load factors of Russian wheat, at one time the most important staple product carried by ships.¹

General classification of commodities.—From a shipping standpoint, commodities are generally divided into three main groups:

- (1) Rough, low price commodities, such as coal, timber, ores, stones, slates, fertilizers and the like.
- (2) Bulky commodities of medium value, such as grain and other foodstuffs, textile materials, crude metals, oleaginous produce, petroleum, hides, skins, and leather, and the more bulky manufactured goods.
- (3) Fine goods of all kinds which are of high value in relation to their bulk.

Tables of Unit Displacement of Commodities.—In 1919 the Bureau of Research and Statistics of the War Trade Board compiled a list of the most important ship cargoes, a copy of which was mailed to the American Expeditionary Force, at the request of the General Staff, and which, since the time of its publication, has been in constant demand as a source of current reference.² In order to show the nature of the plan as well as the degree of its completeness we herewith reproduce part of the first page of the list.

¹ See B. O. Hough, *Ocean Traffic and Trade*, pp. 110, 111.

² Of equal interest is a circular of the Bureau of Standards, Department of Commerce, entitled, *Table of Unit Displacement of Commodities*. This publication gives the weight per cubic foot, space per short ton, space per long ton and methods of packing of a large list of commodities.

STOWAGE OF SHIP CARGOES

Commodity.	Package.	Gross Weight.	Meas-ure-ment.	Stow-age.	Remarks.
Abrasives.....	Case.....	178	8-9	110	For optical use; carbonium stone and dry diamond. See also borundum. Etc. Grindstones, etc.
Acetanilid.....	Barrel.....	238	8-11	88	
Acetone.....	Drum.....	845	24-3	70	110 gallons.
Acid:					
Acetic.....	Barrel.....	475	12-0	60	
	Barrel.....	500	13-8	60	
Boracic.....	Barrel.....	250	10-0	70	
	Barrel.....	275	8-0	65	
Carbolic.....	Barrel.....	600	12-0	60	
	Case.....	237	8-0	65	
	Drum.....	1,100	24-3	54	
Carbolic cryst.	Case.....	84	2-8	71	
	Drum.....	315	10-3	79	
Hydrochloric...	Barrel.....	344	11-11	78	
	Carboy.....	190	0-0	80	
	Carboy.....	235	8-0	83	
Muriatic.....					See Acid, Hydrochloric
Nitric.....	Barrel.....	213	9-0	94	
	Carboy.....	190	8-0	94	
	Carboy.....	210	8-0	70	
Oxalic.....	Barrel.....	254	7-0	67	
	Barrel.....	275	10-3	67	
	Barrel.....	401	10-0	63	
	Barrel.....	374	10-0	67	
Phosphoric....	Demijohn.....	120	6-0	112	
Sulphuric...	Barrel.....	120	7-8	157	5 gallons.
	Barrel.....	120	7-3	150	
	Barrel.....	119	7-8	144	
Stearic.....	Bag.....	223	8-0	50	
	Bag.....	202	4-8	52	
Sulphuric	Carboy.....	229	8-0	59	
	Carboy.....	250	8-0	55	
	Drum.....	1,620	22-0	33	
	Drum.....	1,720	24-3	33	110 gallons.
	Drum.....	900	11-7	31	55 gallons.
Tartaric.....	Barrel.....	260	7-0	60	
	Barrel.....	250	7-2	64	
Advertising matter	Bale.....	100	3-0	63	
	Case.....	600	15-0	56	
	Case.....	224	8-0	80	
	Case.....	1,050	30-7	65	
Aeroplane parts..	Case.....	72	2-0	62	
	Case.....	351	5-0	32	
	Case.....	290	3-0	24	
Aeroplane propeller and parts	Case.....	750	61-6	182	
Agar-agar...	Bale.....	230	7-3	70	
	Bale.....	284	9-8	76	Import.
Agricultural implements parts	Package	290	2-11	23	
	Package	145	1-8	26	
	Package	425	5-8	30	
	Package	688	8-9	28	

Note — Measurements are given, in conformity with shipping practice, in cubic and twelfths of a cubic foot. Thus, "8-9" signifies eight and nine-twelfths cubic feet. Stowage represents the number of cubic feet of cargo space in which a long ton of abrasives packed in cases averaging 178 pounds gross and measuring 8-9 cubic feet.

Cargo factors of some important commodities.— Furthermore, we have extracted from the bulletin, which is sixty-nine pages, the data referring to the most important commodities:

modity.	Package.	Gross Weight.	Meas-ure-ment.	Stow-age.	Remarks.
lt.....	Bag.....	206	5-3	57	Clay. Gravel. Sand.
t.....	Bulk.....	.....	.....	24
	Bulk.....	.....	.....	20
	Bulk.....	.....	.....	20
as.....	Bunch.....	55	3-0	122	From Calcutta.
	Bulk.....	.....	.....	58
(Soy)...	Bag.....	100	3-0	67	
(com- .).....	Barrel.....	400	9-0	50	
	Bale.....	50	Varies.
bitu- ous.....	Bulk.....	.....	.....	43
, green.....	Bag.....	131	5-1	60	
	Bulk.....	.....	.....	50
i (Am.)	Bale.....	500	27-0	121	Compressed. High density. Uncompressed.
	Bale.....	452	14-5	71	
	Bale.....	480	43-0	200	
eed.....	Bulk.....	50	Shelled, from Japan.
(wheat).....	Barrel.....	217	6-9	65	
	Bag.....	141	3-7	57	
	Bale.....	395	11-0	62	
me.....	Barrel.....	426	12-0	63	
coconut).....	Barrel.....	471	12-8	60	Varies.
otton-).....	Barrel.	448	11-11	60	
el).....	Barrel.....	435	12-0	61	
cauxite).....	Bag.....	275	5-0	40	
pper).....	.....	.....	.....	15
on).....	12-17	Varies.
ts.....	Bag.....	102	2-10	62	
rum de).....	Barrel.....	450	12-0	60	
.....	Bag.....	250	5-0	45	
echo i.....	Bag.....	60	
.....	Bag.....	224	6-0	60	Shelled, from Japan.
r(crude).....	Bag.....	140	6-0	96	

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CHAPTER XII

COAL—THE KEY TO THE CARRYING TRADE

Coal a corner-stone of British Maritime supremacy.— Of all the multitude of commodities that are carried by the ships of the world, coal is in a class by itself. An unknown English writer of the seventeenth century said: "The coal trade is indeed the refuge and mother of our entire shipping industry." It represents a very large proportion of the railroad traffic of industrialized countries, but it has an even greater significance for ocean shipping than for land transportation. This significance can best be explained in the light of British experience.

England, more than any other country, has been an exporter of coal. It is therefore valuable to know what Englishmen think of the importance of the coal trade to their country. They duly recognize in their coal exports one of the three pillars upon which their monumental carrying trade rests. In the British Board of Trade report on "Shipping and Shipbuilding Industries" to which we referred before, we read as follows:

"In the period up to the outbreak of the war we were the ocean carriers of the world. Our carrying trade was dependent on three main factors:

- (a) The strong industrial position of the United Kingdom itself, based on free access to the markets of the world for foodstuffs and raw materials.—

- (b) A world-wide Empire with well-distributed coal-ing stations and ports of call.—
- (c) A large coal export trade which provided ships with outward freights which would otherwise have been lacking.”¹

Another departmental committee was appointed by the British Board of Trade to report on the position of the coal trade after the war. The chairman of this committee was the late Lord Rhondda, formerly Mr. D. A. Thomas, the head of the great Cambrian Coal Combine. The committee saw fit to introduce its report by an “essential preliminary consideration” as follows:

British appreciation of the economic significance of coal exports.—“The report is drawn up on the assumption that it is essential to the national interest that the export coal trade which before the war amounted to about one-fourth of the entire output, should not only be maintained, but that every effort should be made to increase it.

“If the export of coal were stopped, or even materially reduced, this would result in the throwing out of employment of a vast and varied body of workers, and the loss of a very large amount of wealth to the country, now distributed in wages and in the maintenance of industry. It would have a serious effect on the shipping tonnage carrying on the overseas trade from our ports and would raise the level of homeward freights and increase materially the cost to the country of foodstuffs and raw materials. It would increase the cost of producing coal required by every industry and householder in the country. It would lead to a serious depreciation

¹ Board of Trade Report on *Shipping and Shipbuilding Industries After the War*, p. 71. § 123.

of railway and dock property, and might even cause the ruin of some of the companies carrying on these undertakings."¹

England's natural advantage as a coal exporting country.—To understand any economic situation one must know what lies back of it. The roots of so enormous a plant as the British coal trade, which spreads its branches to almost every corner of the globe, lie far back in the geological make-up and economic history of the British Isles. Nature seems to have wanted England to be an exporter of coal for it seems as if she had striven to unite with the excellence of quality of England's coal, the greatest possible accessibility of the very coal fields whose product happens to be ideally suited to exporting purposes. We refer to the steam coal of Newcastle, the gas coal of Durhamshire, so badly needed on the continent, and, last but not least, the world-renowned Welsh coal of Admiralty fame. In all those fields ships come within a score of miles of the pithead.

When Emerson said, "Steam is an Englishman," he meant to say that for a long time, England was pre-eminent in the application and exploitation of a great line of inventions, based upon steam, ushered in by such men as Newcomen, Watt, Stephenson, etc. These inventions stimulated coal mining in general and thus, indirectly, helped the export of the coal mined in those parts of the country which, from a transportation standpoint, lay nearer to foreign than to domestic centres of consumption.

England's merchant marine the greatest consumer of bunker coal.—The maritime supremacy of Great Britain,

¹ Report: *Coal Trade After the War*, p. 4.

while largely due to a series of victories over successful rivals, was not complete until the steamship replaced the sailing vessel. England led in the transition from sail to steam. Her possession of the largest fleet of steamships made her the greatest consumer of bunker coal, not only in her own home ports but also in all those distant way-stations which dot the trade routes of the world. This unique system of coaling stations could never have been built up by a nation less fortunate in the possession of colonies on every continent, and its development was greatly aided by England's political control over numberless islands, which lie as though deliberately placed at strategic points of the transportation system.

Growth of British coal exports.—To understand the significance which coal exports have for the shipping industry as a whole we must know the amount of coal exported, keeping in mind the fact that because of its favorable stowage factor, coal is an exceptionally desirable cargo.

TABLE SHOWING QUANTITY OF COAL LEAVING
UNITED KINGDOM PORTS DURING
SELECTED YEARS

Year	Exported as cargo (In millions of tons)	Shipped as bunker in ships engaged in foreign trade	Total
1850	3.2	..	..
1860	7.1	..	..
1870	10.2	3.3 (1873)	..
1880	17.9	4.9	22.8
1890	28.7	8.1	36.8
1900	44.1	11.8	55.9
1907	63.6	18.6	82.2
1913	73.4	21.0	94.4
1918	34.2	8.8	43.0
1919	38.5	12.0	50.5

secondly, we must know in what manner these enormous quantities were distributed over the surface of earth. In order to show this distribution, British statistics divide the world into ten groups of markets follows:

1. France, Channel Islands, Portugal, Azores and Madeira, Spain and Canaries, Gibraltar, Italy, Malta, Egypt, Austria-Hungary, Greece, Bulgaria, Roumania, Turkey, South Russia, Tripoli, Tunis, Algeria, Morocco, etc.
2. North Russia, Sweden, Norway, Denmark, Germany, Holland, Belgium, Iceland and Whale Fisheries.
3. Brazil, Uruguay, and Argentine Republic.
4. West Coast of Africa, Ascension, and St. Helena.
5. British South Africa.
6. Indian Continent.
7. Ceylon, Straits Settlements, Java and other Dutch possessions in India, Philippine Islands, Siam, Hong-Kong, China, Japan, Australasia, and Pacific Islands.
8. British North America, United States [Atlantic], British West Indies, Mexico, Central America, Columbia, and Venezuela.
9. Peru, Ecuador, Chile, Bolivia, and United States [Pacific].
10. East Coast of Africa, Mauritius and Dependencies, Bourbon, Arabia, Persia, Aden, etc.

Geographical distribution of British Coal exports.—In the following table,¹ the numbers inserted at the head of each column refer to these groups of markets:

STATEMENT SHOWING THE QUANTITY OF THE EXPORTS OF COAL

(In thousands of tons)

From the United Kingdom to the Principal Groups of Foreign Countries and British Possessions for Selected Years from 1850 to 1908. The groups are indicated on the chart:

YEAR	1	2	3	4	5	6	7	8	9	10
1850	1,327	1,216	12	9	26	97	34	365	60	68
1860	2,452	3,029	33	27	80	146	710	204	77	
1870	4,038	4,900		27	92	293	777	406		
1880	6,212	8,290	125	109	146	655	632	783	503	300
1890	9,252	14,766	301	204	282	680	747	149	1,454	677
1900	18,108	21,068	625	708	254	100	765	183	1,977	303
1908	20,100	29,300	456	85	233	198	473	317	4,097	602

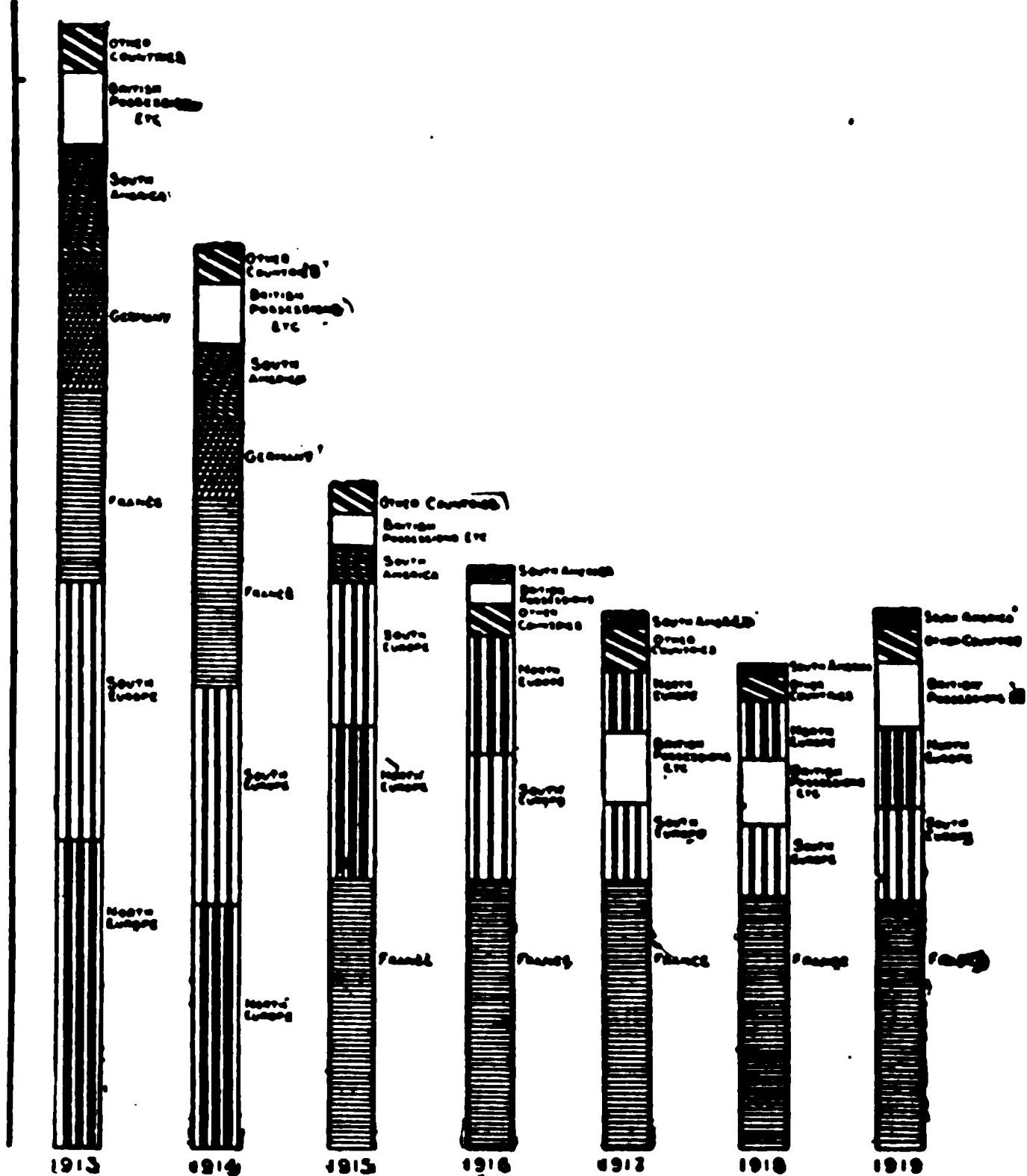
Probably because of the complete dislocation of the British coal export trade caused by the war, the statistical data for the last few years have not been arranged in the same manner. However, the same information is contained in the table on page 229 which covers the years 1913-1919.²

It will be noticed in both tables that the bulk of exported coal moves towards groups I and II, that is towards the European continent and to non-European ports of the Mediterranean, or, primarily, to the great coaling stations such as Port Said, Gibraltar, Malta, etc. As far as the exports to the nearby continent are concerned the traffic is largely in the nature of a ferry

¹ These figures should be studied in conjunction with the load factor statistics, given in Chapter II, p. 28.

² From Annual Report of the Chamber of Shipping of the United Kingdom, 1919-1920, p. 147.

FIG. 105. DISTRIBUTION OF COAL EXPORTS OF THE UNITED KINGDOM



rvice. Colliers speed across the Channel or the North Sea from Newcastle and the Humber ports and return with ballast as soon as they have discharged their cargoes. But the situation is different with the Baltic and the White Sea trade, and the traffic to the Mediterranean emphasizes this difference still further. In both cases the

majority of ships taking the coal from England and Wales to its destination;—Scandinavia, Spain, Italy, Gibraltar, Port Said, Constantinople, etc., bring back to England or northwestern continental ports, lumber from the White Sea or Scandinavia, grain from the Black Sea, cotton from Egypt, ore from Spain, etc. Coal, in other words, holds the balance against a variety of imports, thereby giving the carrying trade if not all-around employment, at least much better employment than would be the case in the absence of coal.

Distant markets emancipated from British coal supply.—The value of this return freight service rendered by the coal export trade increases in importance in proportion to the distance of the sources of supply of the imports of raw materials and foodstuffs which are brought into the United Kingdom and the industrial countries of the northwestern section of the European continent. Therefore, the greatest benefit to British shipping is derived from those branches of the coal export trade which reach to the far-distant over-sea markets of the non-European continents. There was a time when British coal was readily marketed in almost every part of the world, with the single exception of the Atlantic coast of North America, but during the last twenty years the most valuable portion of the British coal export trade—the export to distant over-sea markets—has suffered from severe competition on the part of Great Britain's own over-sea possessions as well as from her foreign rivals. This fact is disclosed by the table on page 231, which shows the rapid growth of coal production of British over-sea possessions and foreign countries which formerly depended on British coal:

PRODUCTION OF COAL

(In million tons¹) . . .

South Africa	India	Canada	Aus-tralia	New Zealand	Japan	Chile
... ...	1.3	1.7	3.1	0.5	1.3	...
... 2.1	...	...	...	...	...	...
... 0.1	2.2	2.8	3.5	0.6	2.6	...
... 1.2	3.5	3.1	4.3	0.7	4.8	...
... 2.1	6.1	5.2	6.4	1.1	7.4	...
... 3.7	8.4	7.7	7.5	1.6	11.8	...
... 4.9	12.8	...	10.2	...	...	...
... 4.9	12.8	9.3	10.2	1.9	14.7	...
... 8.8	16.2	10.7	10.4	1.9	17.1	1.3
... 9.5	16.5	9.6	10.4	2.3	17.3	1.1
... 9.3	16.4	9.5	9.4	2.2	15.5	1.7
... 11.2	16.4	9.5	8.1	2.3	17.5	1.4
... 10.9	17.3	8.7	...	2.1	19.9	1.5
... 9.9	...	...	...	...	20.8	...
...

ial years China exports almost 1½ million tons of coal.

part of this rapid development of new coal fields in these countries has been that to-day little British coal is sold east of Aden, and that exports to South Africa have practically ceased, Natal and the Transvaal having themselves become coal exporting countries. To-day

The South American market is the only important field in which large amounts of British coal find a ready sale. Although, even here, Chile has become, and still threatens to become, a strong rival as far as the East Coast is concerned. On the East Coast, especially

in Argentina, British coal has to compete among others with South African coal.

In competition.—But there was another kind of competition with which the English coal exporter had to reckon. Before the war, Germany, realizing the

importance of coal as a factor in war, had collected from various sources which even if the fact is not explicitly stated, give quantities in different tons, therefore figures must be taken as approximate only.

enormous value of coal export from a shipping stand-point, had entered mainly through the Rheinisch-Westfälische Kohlen-Syndikat, upon a systematic campaign to force England to yield, foot by foot, the markets which she had once considered her exclusive domains. The war has written "finis" to this chapter, at least for a considerable time to come.

American competition.—Of more recent date, but far more formidable to-day, is the competition which this country offers to the British coal exporter. Until the war threw the mechanism of world trade out of joint, American coal was exported almost exclusively to adjacent territory, that is, chiefly to Canada, the West Indies and Cuba. Beyond these limits American coal went only in negligible quantities, figuring in European imports only when some extraordinary event, such as the miner's strike in England, or a war, raised coal prices and freight rates far beyond their normal level. But what was abnormal before the war has, in many cases, become normal. Freight rates continue to soar and the British coal price continues to rise considerably beyond the American figure, thus inviting American competition into markets such as France, Italy, etc., formerly considered immune by the British exporter. The rapid growth of American coal exports is graphically presented in the chart on page 233.¹

Growth of American coal exports.—This situation was well described by a coal exporter² at the Seventh Na-

¹ From the *Annual Report of Chamber of Shipping of the United Kingdom, 1919-1920*, p. 149.

² *American Coal and Its Relation to Our Foreign Trade*, address by E. D. Enney, President, Williams Cory-Mann George Corp., delivered before the Seventh National Foreign Trade Convention, San Francisco, Cal., May 14, 1920.

COAL EXPORTS FROM THE UNITED STATES



Figures for 1920 estimated from latest data by the author

tional Foreign Trade Convention, San Francisco, May, 1920. We have extracted the following two paragraphs from this valuable and interesting address:

"Prior to 1914 our total exports had never exceeded 9 million tons in any year, and less than 2 million tons of this were actually carried overseas, the bulk of the shipments going to Canada, East Coast of South America, Mexico and the West Indies. The great movement of American coal to Europe and South America began in the early part of 1915, and something more than 23 million tons were shipped that year. Shortage of vessel tonnage and submarine warfare subsequently so interfered with shipments that there was no marked increase in the volume of our coal sales abroad until 1919, when a record in the yearly volume of shipments of American fuel was made. Had not the miners' strike in November occurred, with its consequent loss of production, and Governmental restriction of exports, which was maintained in effect until May 1st, the total exports of American coal in 1920 should have reached 30 million tons.¹ Without further serious labor interruptions, and assuming that there will be a gradual improvement in the car supply, it may yet be possible to ship a quantity this year which will come close to this figure. The ability to increase our exports of coal beyond the 30 million mark will depend entirely upon whether the bituminous-coal-carrying railroads will find it expedient to improve their tidewater handling facilities. Our exports of coal are limited obviously by railroad facilities to transport and dump coal, and in view of the present

¹ As a matter of fact this figure was actually exceeded by several million tons.

shortage of necessary labor required to handle it over the piers and trim the coal into vessels, and of the fact that little has been done recently in the way of added terminal equipment, the limit has about been reached.

"Of particular interest is the shipment of American coal for bunkering purposes. Previous to the war the United States was not an important factor in the supply of bunker coal, that is to say, the coal required by a steamer for its own propulsion. It is true that for years foreign steamers have called at our ports to replenish bunkers, but it is not long ago that vessels came out from Scandinavia, Holland, France, England and Mediterranean countries, supplied with British or German coal for the round voyage; and comparatively small quantities, if any, were taken here. With Germany and France unable to produce sufficient for their own needs, and the United Kingdom production per man diminished by 30 per cent, the Eastern and Gulf coal ports of the United States are securing a rapidly increasing share of the world's ships fuel supply. Practically all liner tonnage plying between the United States and Europe are compelled to coal here, as are practically all the lines operating from Europe to the Far East through the Panama Canal. Many American firms have established bunkering depots in the West Indies and at the principal ports on the East and West coasts of South America. At least three important stations are maintained in the Mediterranean, and eventually private enterprises will displace the United States Government as suppliers of steamship fuel at or near the approaches of the Panama Canal."

Geographic distribution of American coal exports.— It is of interest to study the geographic distribution of

our coal exports. The following table supplies the necessary data.

**EXPORTS OF ANTHRACITE AND BITUMINOUS COAL
FROM THE UNITED STATES BY COUNTRIES DURING
THE CALENDAR YEAR 1919**

Countries	Anthracite Tons	Bituminous Tons
Austria-Hungary	185	212
Azores and Madeira Islands.....	...	32,856
Belgium .....	...	200
Denmark .....	...	88,903
France	2,529	523,243
Germany	20	8,540
Gibraltar .....	...	20,291
Greece .....	...	48,120
Italy	9,355	1,632,995
Netherlands	2	722,191
Norway	2	159,843
Portugal	45	45,178
Spain	680	18,623
Sweden	100	252,891
Switzerland .....	...	528,575
Turkey in Europe	201	4,205
England .....	...	6,588
Bermuda	2,966	19,438
British Honduras	1	601
Canada	4,344,564	10,669,490
Costa Rica .....	...	1,717
Guatemala	51	3,893
Honduras	996	8,357
Nicaragua	154	2,026
Panama .....	...	72,097
Salvador .....	...	2,243
Greenland .....	...	1,217
Mexico	4,458	101,679
Miquelon, Langley, etc.	368	...
Newfoundland and Labrador	12,215	4,207
Barbados	304	107,635
Jamaica	5	33,088
Trinidad and Tobago	2	41,319
Other British West Indies.....	393	28,038
Cuba	51,856	971,399

5 OF ANTHRACITE AND BITUMINOUS COAL
 HE UNITED STATES BY COUNTRIES DURING
 THE CALENDAR YEAR 1919—*Continued*

	Anthracite Tons	Bituminous Tons
est Indies .....	...	15,346
st Indies .....	...	24,694
est Indies .....	...	23,934
.....	2	...
Republic	8,530	13,690
.....	25	483,389
.....	1,691	634,109
.....	231	93,618
.....	723	11,835
.....	...	2,948
lands .....	...	15,208
ana	30	3,746
ana .....	...	1,001
.....	400	45,819
.....	...	194,997
.....	2	496
: Indies .....	...	13,221
Asia .....	...	3
Asia	101	...
nd .....	...	50,034
sh Oceania .....	...	1
Islands	2044	...
st Africa .....	...	4,159
st Africa .....	...	6,174
ands .....	...	19,587
ica .....	...	52,001
ica .....	...	5,166
Africa .....	...	43,892
.....	...	37,543
.....	<hr/>	<hr/>
.....	4,443,391	17,958,514
.....	<hr/>	<hr/>

these figures it appears that to the United States
 rter, Canada and Mexico mean much the same
 e near-by European continent to his British com-
 The Caribbean—potentially at least—is his Medi-

terranean, and the overseas markets have similar significance for both countries.

Economic value of British and American coal exports compared.—But when we wish to carry this comparison between British and American coal exports further, we find a fundamental difference in the foreign trade situation of the two countries. Our chart showing the bulk of American exports and imports revealed the fact that the weight of our exports exceeded that of our imports even before we had a large coal export trade. But the situation is very different as far as Great Britain is concerned. The following table shows the weight (in million tons) of imports into the United Kingdom and the weight of the coal exported from that country:¹

Year	Food Imports	Raw Material Imports	Other Imports (Weight Estimated)	Total Imports	Coal Exports
1913	17.4	34.9	7.1	59.3	73.4
1914	15.7	28.8	6.1	50.6	59.0
1915	15.5	27.9	5.9	49.3	43.5
1916	14.5	24.2	5.3	44.1	38.4
1917	12.8	18.7	4.3	35.8	37.8
1918	10.9	20.5	4.3	35.7	34.2
1919	13.0	23.5	5.0.	41.5	38.5

From this table we learn that in 1913 and 1914 coal was more than sufficient to keep the balance to British imports and to a part of the commodity movement going to the northwestern part of Europe.

British coal Europe's great return cargo.—British coal is practically the only bulk commodity which moves in large and regular volume from Northwestern Europe to

¹ See *Annual Report, 1919-1920, Liverpool Steamship Owners' Association.*

the overseas lands. As such it is the one commodity which the tramp steamers bringing raw materials and foodstuffs to Northwestern Europe can take out. Mr. Edgar Crammond, in "The English Shipping Industry,"¹ states this fact as follows:

"It was the fact that they had not enough outward freight that presented such difficulties to Continental shipping companies. Many of these even came to England to load with coal before setting out on their voyage. India was the greatest factor in the export trade. The key to the Indian Ocean was the Suez Canal, and the key to the Suez Canal was the British coal export; so that when they talked about stopping the export of coal it must be remembered that it would mean a redistribution of the whole of the trade routes of the world."

Without British coal to defray part, or all, of the outgoing expenses these imports would have to pay for the round trip from Europe out to the foreign markets in ballast and back with the respective commodities, grain, ore, cotton, or lumber, as the case might be. In other words, import freight rates would have to be raised by the amount of the export coal rate. In many cases, such an increase would make freight charges appear prohibitive and in all cases, it would put a burden upon the European industries which turn the imported raw materials into finished products and employ the masses of labor for whose sustenance the foreign foodstuffs are imported. The relation of the export coal freight rates to the import freight rates is shown by the table on page 240, which the author compiled for a treatise on the "History, Organization and Significance of the British Coal Export Trade":

¹ p. 23.

**TABLE SHOWING COAL RATES CARDIFF TO LA PLATA
AND THEIR EFFECT ON WHEAT RATES
LA PLATA TO EUROPE**

Date	Wheat Freight La Plata to Europe	Coal Freight Cardiff to La Plata	Date	Wheat Freight La Plata to Europe	Coal Freight Cardiff to La Plata
1910 July 3	13 6	13 3	1910 Oct. 2	16 6	10 6
10	11 6	12 10½	9	16 6	10 6
17	10 6	13 9	16	16 —	10 —
24	9 6	13 6	23	17 —	10 —
31	7 —	— —	30	16 6	9 6
Aug. 7	10 6	— —	Nov. 6	15 —	9 —
14	13 —	12 6	13	15 —	8 —
21	15 —	12 —	20	17 —	8 3
28	17 —	12 —	27	17 6	7 1
Sept. 4	18 —	11 —	Dec. 4	17 6	8 —
11	16 6	11 —	11	18 —	8 8
18	16 6	11 —	18	18 6	7 6
25	16 6	10 6			

Lord Rhondda, in his remarkable paper, entitled "Coal Exports, 1850-1900," shows the quantitative relation existing between coal exports and wheat imports, in the case of British India, by the following figures:

Year	Quantity of Wheat, etc. imported to United Kingdom from East Indies	Quantity of Coal exported from United Kingdom to Indian Continent
1895	440,000 tons	805,000 tons
1896	106,000 tons	528,000 tons
1897	27,000 tons	195,000 tons
1898	477,000 tons	331,000 tons
1899	410,000 tons	433,000 tons
1900 .....	.....	100,000 tons

To be sure, these figures are no longer applicable to present-day conditions in this particular market, but the principle remains the same. Coal is the great European return cargo, and it is in that sense that the British coal exports are looked upon as one of the three great principal factors which account for England's industrial strength and maritime prowess.

Nature of American exports.--It is very important

for America to grasp this economic significance of coal exports. For the increasing industrialization of the United States is gradually changing the nature of our exports and imports, adding to the weight of the latter and reducing the weight of the former. Added to this is the fact that we have become the creditor nation of the world, which means that before very long our imports will exceed our exports. As yet, the change has not been sufficient to make it seem advisable to add to our heavy exports of cotton, grain, lumber, etc., a volume of seaborne coal exports in any way comparable with that of England. But while this is the general situation, our imports from South America, Asia and Australia are growing in volume in excess of the weight of our exports to these countries. Coal exports to these specific regions should therefore be encouraged in so far as the imports are tramp and not liner cargoes, for it should be remembered that manufactured commodities are not carried by the same class of vessels as are bulky raw materials. But one thing seems reasonably certain, that the kind of coal export trade that is carried on at the present time between this country and Europe, which is of a ferry type, stands and falls with the high freight rates and abnormal coal prices of to-day which alone make a one-sided use of tonnage across the Atlantic a paying proposition. It should be viewed as a by-product of the abnormal economic situation at present prevailing in Europe.

Future competition between England and America.— The joint effect of American competition and of the reduced production of the British coal mines, which fell from 287.4 million tons in 1913 to 229 in 1919, has been that British coal exports have been reduced to less than half their pre-war size. There is no question but that

the decrease of the amount of coal available for export has been instrumental in accelerating the transition from coal to oil discussed in a previous chapter. This transition is bound to have a lasting effect upon the coal trade situation throughout the world. But England will fight desperately to regain whatever portion of the world's market can be held by her consistently with economic laws; for, "the sea is England's front door, back door and side door, and she will permit no menace to her safety thereon. She always has been and always must be ready to fight for it—war economic, war diplomatic or war military have no terrors for her, compared with even second place on the ocean. If oil supplants coal, she will get a sufficient oil supply or die trying; for an adequate fuel supply is to the British Empire one of the prime conditions of existence."¹

We dare not predict what the future will bring, but we offer the advice to every student of world shipping to keep his eyes fixed on approaching developments in the coal export situation here and abroad. Coal is indeed the key to the carrying trade.

¹ R. E. Annin, *Ocean Shipping*, p. 91.

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CHAPTER XIII

CARGO HANDLING AND STOWAGE

Reasons for American neglect of seaport equipment.— The direction in which the inventive genius of a people develops is determined by the surrounding economic conditions. In the case of this country, a surplus of natural resources, coupled with a shortage of labor, has been the determining factor, with the result that in the sphere of labor-saving devices, the American inventor has outdone all rivals. But, until recently, one field has been utterly neglected, and that is the handling of general cargo, both loading and unloading.

The reasons for this apparent negligence are not hard to discover. America's face was turned to the mountains and the prairies, and her interest was absorbed by the development of fields, of mines, of railroads and of cities. Her foreign trade flourished because her exports sold themselves, being sorely needed by foreign buyers. Ocean shipping, and with it seaports, were neglected.

Recent changes in the situation.— That situation has radically changed. America has become, as it were, over-night, the strongest rival of England, the "Mistress of the Seas." American exports are more and more changing their nature and destination in such a way as to make forceful salesmanship the necessary requisite of their successful distribution.. The marginal profit is reduced under the increasing pressure of foreign and domestic competition.. America's interest as an exporting and a ship-owning nation now requires elimination of all avoidable waste motion; and terminal handling,

icularly cargo handling, is one of the sore spots—perhaps the worst—of our system as it has been handed down.

The war has demonstrated the acuteness of the situation by emphasizing our labor shortage, by necessitating greater speed and by increasing the volume of freight to be handled. The general rise of prices has added to the costliness of the old system. The recent labor shortage, due partly to diminished immigration, partly to diversion of dock laborers to other occupations, coupled with the increased cost of living, has resulted in inflation of wages, reduction of working hours, and frequency of strikes unknown in pre-war days.

The effect of American vessel ownership on the need for cargo handling equipment.—Besides these more or less general changes which offer powerful incentives to the invention and installation of mechanical cargo handling devices, two additional causes, purely maritime in nature, have contributed to the rapid change of attitude. Before the war a negligible portion of the foreign trade of this country was carried in American ships. As far as the general cargo was concerned, it was almost entirely transported by foreign vessels of the liner type. The result was that crews were hired abroad for the round trip. In order to keep the crew busy during their stay in American ports, the foreign shipowners preferred to discharge and load cargo by means of the ship's own derrick, worked by the ship's crew. Therefore, the incentive for the installation of mechanical cargo handling equipment in American ports was lacking. This situation has undergone a radical change. In the first place, the newly acquired American merchant marine is assuming a rapidly increasing share of our foreign trade.

The Seamen's Law accentuates this necessity.—Secondly, the La Follette Seamen's Law is eliminating the necessity or desirability of keeping the crew of foreign vessels under pay during the stay in the American port. The details of this law will be more fully discussed in a later chapter. Here it may suffice to state in explanation of the aforesaid, that under the new law, desertions have been rendered considerably easier than they have been before. All this combined represents a powerful array of driving and beckoning forces in favor of the introduction of labor-saving devices.

Opposition to mechanical installations.—But there are also forces working the other way. Every change meets with difficulties. No progress is possible which does not, at least temporarily, harm those whose interests are linked up with the old system which is to be changed. In this case the opposition comes from the longshoremen's and the stevedoring unions, who are afraid that the powerful position which they at present hold is endangered. It is an old story, as old as the history of mechanical devices in general. When we read that dock workers head the tractors unmanned towards the river while the foreman is not looking, we are reminded of the days when hand-weavers demolished the first power-loom. The argument that met the ill-judged opposition of those eighteenth century laborers is the same as that which can be applied to-day. Any device that tends towards economy increases the salability of the commodity produced, transported or handled, and increased salability, in the long run provides employment for more people than are temporarily deprived of work. This has become almost an axiom in economic science. But be-

indirectly enlarging the opportunity of employing mechanical handling devices, by substituting man-power for muscular power, eliminate drudgery and save fatigue from the life of the dock laborer and turn the unskilled hand-laborer of to-day into a skilled technician of to-morrow. There is little doubt but that common sense of the union leaders will see the point of these arguments and lead their followers in the right direction.

It need be said of the opposition raised by some conservative ocean shipping-men, who believe that what was good enough for their fathers is also good enough for them. Nor will it be difficult to refute the arguments of those who say: "What is the use of our installing new devices since the foreigner will not be slow to copy them?" For it happens that, in this case, some countries, prompted by necessity, have for decades studied the problems of mechanical cargo handling, leaving consequently a good lead.

Aim sought by mechanical handling.—The purpose of installing mechanical cargo handling devices is twofold. This aim may be realized by reducing the cost of loading and unloading or by speeding up the process, thereby accelerating the turn-around of the ship.

A ship in port is a liability, involving hourly losses through interest, depreciation, port charges, etc. The amount increases with the cost of the ship and the freight rates it can earn. Considering the interest of the general public, it will pay to install mechanical cargo handling devices as long as the aggregate sum spent in handling the cargo, plus the above-mentioned expenses of the ship, are reduced.

That is the aim. The question is: By what method is this aim to be attained? To answer this it is necessary to analyze cargo handling¹ on the basis of:

- (1) The nature of the cargo to be handled.
- (2) The kind of movement to be performed.
- (3) The type of ship which is to be loaded or unloaded.

Different cargoes require different handling devices.—From the standpoint of the handling problem ship cargo is divided into three classes: bulk commodities or specialized freight, standard packages, and miscellaneous cargo. Bulk commodities are either of liquid form or else consist of a more or less uniform mass of relatively small pieces and are usually shipped in such quantities that entire ship capacities are filled. Typical bulk commodities are: oil, molasses, grain, ore, saltpeter and coal. Standard package freight consists of bags of flour, coffee, sugar, rice, etc., or of bunches of bananas, or of crates of fruit and vegetables, of frozen carcasses, etc. Miscellaneous cargo hardly requires a definition. It is made up of the remaining freight not classified above.

Handling movements analyzed.—The movements to be performed in handling cargo may be divided into two main groups. In the first place, the actual transfer of the cargo from the ship to land, or from land to ship, must be considered; secondly, the handling of the cargo on the pier or quay immediately before loading or after unloading. We shall confine ourselves almost exclusively to those movements which deal directly with the shipping end. The transfer movement itself may again be divided into lateral or low trajectory, and vertical or

¹ Our analysis is largely based upon R. S. MacElwee's *Ports and Terminals' Facilities*, particularly Chapters X, XIII and XIV.

trajectory, movements. The former is characteristic of loading or unloading cargoes from river and lake crafts which are equipped with side-ports, that is to say, openings on the side of the ship. We may speak of side-port transfer. Cargo may be moved through side-ports by unassisted man-power, by hand trucks, conveyor systems or by means of the ship's

The construction of ocean-going vessels does not provide for side-ports, except to a very limited extent, and cargo handling takes place through hatches, which are located in the decks. The modern tendency is towards making these hatches as wide as possible, in some cases so wide that they extend clear across the ship. The hatch transverse movement requires vertical movements in addition to the more or less horizontal swing which takes the cargo from ship to ship or from land to ship.

Miscellaneous cargo offers greatest difficulty.—The technical devices which are being installed must of course be adapted to these differences just described. The most difficult problem is offered by the mechanical handling of miscellaneous cargo. It stands to reason that the development of an apparatus capable of handling miscellaneous cargo of various weights, shapes and sizes, is necessarily a complicated business. As far as this country is concerned, the first mechanical devices for handling of miscellaneous cargo were established in connection with coastwise and Great Lakes craft, that is to say, with the type of vessel which is equipped with side openings. Two machines have proved most useful in this field. One of these is the Reno Conveyer of the Otis Elevator Company, which consists of a chain with lugs to engage the hand trucks

and haul them up the ramp.¹ In this case the old system of manual operation is only slightly modified and yet it is claimed that savings amounting to from 15 to 25 per cent. can be effected. A more radical improvement is obtained by the use of portable conveyors, usually of the continuous elevator conveyor type. The conveyor is simply a moving gang plank. The description of the machine appears in "The Americas" and reads as follows:

Loading and unloading through side openings.—"This machine has developed an efficiency little less than marvelous. The limit to the service it will perform is only bounded by the ability of the workers at the receiving end to feed the moving belts, and of those at the delivery end to receive the packages and stow them quickly and safely away in hold or warehouse.

"This machine is entirely portable and lies out of the way until the time for use is at hand. It is then hoisted by the ship's derrick and placed in position in proximity to one of the hatches. If the ship is of modern construction with large-sized hatches it can be lowered directly into the hold. The land end of the contrivance is then arranged where it can connect with whatever automatic receiving or delivering apparatus the pier or warehouse is equipped with, and operations start. When in operation it merely peeps over the edge of the hatchway and automatically discharges cargo placed in it on the pier, in the hold, or between decks, as desired. It occupies only a few square feet of hatchway space and permits the ship's derrick to work on the heavier freight in the same hatch and at the same time.

¹ Owing to changes of tide and the seasonal variations of the water-level and rivers, freight from this type of craft does not always move entirely horizontally.

accounts have been kept of the work of this machine. It has been found that when workers become accustomed to its use and learn just it that it can be got ready for operation twenty minutes after the ship ties up to the wharf. Gravity conveyors were used to assist and taking away from the main machine, 1,500 deliveries of miscellaneous packages, barrels, and bags averaging in weight from 50 to 100 pounds, were made per hour. This speed could be maintained for hours at a time, doubling at least the amount previously done in that time and reducing in a marked manner the amount of breakage formerly attributed to the old crane system for small packages. The incidental damage to shipments, which often amounted to large sums, has been almost entirely eliminated.

It is claimed that when operated in conjunction with the hoists for the heavier freight the following economies have been secured:

Speed of handling ship's cargo within its capacity can be increased from 25 to 75 per cent.

The amount of labor required can be appreciably reduced.

The economy of electric current consumption is effected, most machines operating on 3 horse-power motors.

"Breakage to goods is practically eliminated."¹

Adaptation of the machine to ocean-going vessels.—More important than our purpose is the problem of loading or

unloading ocean-going vessels; in other words, the problem of the hatch transfer. Three distinct methods are recognized in modern practice.

- (1) By means of the ship's tackle without the assistance of mechanical equipment on land.
- (2) By means of the cargo-mast which permits of the joint operation of the ship's tackle and the wharf winch.
- (3) By means of cranes, sometimes supplemented by subsidiary apparatus on board ship.

We have had occasion to point out that until recent years foreign ships, while frequently making use of cranes and other mechanical devices installed in European ports, preferred to use their own loading and unloading machinery. As a result, most of the cargo transfer in this country used to be accomplished by means of the ship's tackle. This is briefly described as follows:

The work of the ship's tackle.—"All steamers other than tankers carry their own unloading machinery. Between the two forward hatches is a short, stout mast with several movable booms, and another between the after-hatches. The modern freighter has as many as ten booms to a mast. Together with the donkey engine and tackle, loads of a ton or more may be handled by each boom and engine.

"The cost of transferring freight by this tackle is not large, not over six or seven cents a ton on the average. This includes placing the cargo in the sling, lifting it out of the hold, and depositing it on the wharf lighter."¹

The work of the ship's tackle may be successfully supplemented by means of a cargo-mast erected on the

¹ Mac Elwee, *op. cit.*, p. 153.

pier edge. The nature of this apparatus and of its work is described as follows: "A block and tackle with a line from a drum hoist on the pier to the hook is buttoned to this girder. A ship's boom and hoist also operate another line to the same hook, thus both the ship's tackle and the pier tackle work together. There are three movements. The load in the hold is attached to the hook; (1) the ship's winch raises the load; (2) the pier winch then starts to pull and the ship's hoist lets go; (3) the pier hoist then lowers the load. The movement made is without lost motion and by the shortest possible route."¹

The equipment on land.—Equally as important as the mechanical equipment used in direct connection with the ship, is the equipment on land. Modern practice in building ocean terminals differs radically from that of the past. To-day the gantry crane is the unit around which all else seems to revolve. We quote once more from the above mentioned article which appeared in "The Americas": "The crane has demonstrated itself to be the most economical, most flexible, and quickest of all machinery used in connection with the handling of general cargo. When the United States was suddenly called upon to equip ports in France with machinery by which a potential army of 4,000,000 American soldiers could be fed and munitioned, a gantry crane was chosen for the major share of the work."

Late adoption of cranes explained.—We have pointed out one of the reasons why cranes were practically absent from American ports, while in Europe they have been in successful operation for decades past. We have also pointed out why this situation is at present ma-

¹ *Ibid*, pp. 153, 154.

terially changed. But there are other reasons besides the preference of foreign shipowners for the use of their own tackle.

American and European transportation conditions differ essentially from each other. Especially on the continent, inland water transportation plays an important part. This means that as far as ocean-going vessels are concerned, a large amount of cargo is handled from and into river barges. These, however, because of their construction cannot be equipped with adequate unloading and loading devices, thus necessitating mechanical devices on land. Also, European port construction differs materially from the American practice. The long, narrow pier is the characteristic feature of the American port. This, at least in its earlier form, does not provide sufficient room for the installation of semi-portable, or portable, gantry cranes. Also the question of port-ownership has a bearing upon this matter. A typical European port is municipally, or at least, publicly, owned, while many piers in American ports are owned or leased by private companies. Public ownership has the advantage over private ownership in this case, being able to distribute a larger amount of traffic over a given unit of quay frontage. This means that costly handling machinery is more apt to be economically utilized. But, apart from this, many European municipalities are so impressed with the indirect advantages accruing from a large water-borne traffic within the confines of their particular port that they are often willing to incur expenses, even though at an apparent loss. It is interesting to note that because of the general use of cranes in European por's the rolling stock of the rail-

roads has been adapted to their use. That is to say, a large number of open cars are found.

Cranes do not always pay.—Another point to be considered is the fact that the installation of mechanical devices, particularly cranes, does not pay unless the general cargo handling system has reached the point of efficiency which allows the crane to do its best.

There is no use in installing cranes capable of handling miscellaneous cargo, at the rate of 250 tons or more an hour, if, owing to the lack of other facilities, the freight piles up in the transit shed or on the pier, causing congestion. As a rule, the crane pays best when it is used in connection with railroad facilities placed right alongside and with transit sheds provided with mechanical devices for tiering, conveying and elevating freight. All this goes to show that the question of crane installation is closely linked up with many factors of the transportation system.

Types of cranes.—Types of cranes may be distinguished according to their construction, lifting capacity, range, and the power by which they operate. The oldest type is the steam crane, which was followed by the hydraulic. To-day, electricity is the kind of power most generally used. What most interests us here is the efficiency and economy of the crane.

“As an example for the port of New York, it happened that portions of the waterfront of certain foreign cities had not been improved while other portions were, so that, as the whole ports were fully occupied by vessels, it was possible to compare the unequipped sections with the equipped under favorable conditions to determine their relative utilities. The following figures are from the tabulated results comparing the average of these

whole ports with those portions later equipped with machinery. It is easily deducted from these figures what is possible at the port of New York.

"These comparisons between the average transferring capacity per linear yard per annum at such ports are of instructive interest:

	Average of the whole port per linear yard	Average of portion equipped
Havre, France	385 tons	1,540 tons
Rouen, France	483 tons	1,121 tons
Marseilles, France	665 tons	1,694 tons

"Not only can the above figures be attained at the port of New York, but, instead of 150 tons per linear foot, much better results, on account of improvements made in appliances since the above figures were tabulated."¹

Economies effected by cranes.—As to the saving effected by the use of cranes, this is more difficult to calculate because it primarily consists in greater speed of cargo handling, the resulting reduction of the ship's idle time and the better utilization of pier or quay space. The following statement made by the same authority may be of interest:

"With ten cranes 600 to 800 tons per hour can easily be attained, including the loading when full load capacity can be transferred.

"In ten hours this would give 6,000 tons, and the vessel would be discharged and loaded in two days; 9,000 tons have been unloaded in a similar time, but the above can be made the average.

"That is, by such machinery as is installed in every

¹ H. McL. Harding, *Journal of Commerce*, June 30th, 1917.

commerce port of England, Germany, France or
l, 6,000 tons transference per day are to be com-
with the 1,500 tons at New Orleans. The ship's
ons will be one-third or one-fourth the time, and
same berthing linear frontage four times as many
an be berthed in a given period. The rental
r ton would be one-fourth, and on a tonnage
ll the overhead charges would be also one-

Handling standard package freight.—The same appli-
which are capable of handling miscellaneous cargo
applied to standard package freight. Here also
ie has amply demonstrated its usefulness. How-
because of the uniform nature of the cargo, the
or chain finds a wider field of application. A
example is the banana unloading machine such
ound in New Orleans, Galveston and a number
r United States ports. These machines have an
on similar to that of a miscellaneous cargo un-
The bananas are carried on an endless belt
conveys thousands of bunches per hour without
; or damage of any kind. These unloaders not
cilitate the quick turn-around of the ships, but
the railroads to start the fruit north in refrig-
cars a few hours after the arrival of the ship.
Similar devices are used to handle frozen meat,
Australian mutton.

When the standard package freight is to be moved
ips to warehouses another innovation proves sat-
y, namely, the telpher, or overhead monorail.
This equipment does not pay in connection with
sheds, but has proved satisfactory in connection

with the large quantities of sugar stored in the Chalmette Sugar Refinery and with the municipal cotton warehouses at New Orleans.

American efficiency in handling bulk commodities.—The highest point of efficiency, as reflected by speed and economy, has been reached in the case of the handling of bulk commodities. Here the United States leads, having established on the Great Lakes the world's record of mechanical loading and unloading of iron ore. The American oil industry was the pioneer in the handling of petroleum in bulk, and the coal-loading pier at Curtis Bay, Baltimore Harbor, is said to be most efficient in every respect. Also, as far as the handling of grain is concerned, this country is excelled by no other. It will be noticed that the experience of this country, the Great Lakes district excepted, has been primarily with the loading of bulk commodities. But ordinarily, loading and unloading go hand-in-hand; thus a grain ship is loaded by unloading a number of barges, and a steamer is bunkered in the same way. Furthermore, increasing ore imports from Cuba, Chile, Spain, etc., add to our experience in unloading.

Loading coal and grain.—We take up the matter of loading first. Wherever possible gravity is used. At Lake Superior ports, the ore, which is moved in copper casts on "docks," meaning piers, is dumped through pockets into the ship's hold. In the case of coal two distinct processes must be noted, where it is exported in cargo lots. Coal is raised either by the conveyor belt or in railroad cars by means of hoists, or loading towers, and dumped into chutes leading into the ship's hold. The above-mentioned Baltimore coal pier has a coaling

capacity of from five to seven thousand tons per hour, dependent upon the character of the boats served. The topography of a harbor determines which particular method can be applied. The most efficient way of bunkering ships is by means of mechanical devices of which the bucket chain elevator seems the most efficient. Each unit is capable of delivering 125 tons per hour and as many as six units may be simultaneously attached to the side of a ship.

The loading of grain was among the first operations to be handled on the principle of the continuous motion system.

We quote the following account from "Ocean Freight Rates and the Conditions Affecting Them":¹

"The method of loading grain in bulk requires little detailed description. The grain is carried by the machinery of elevators to the elevator scales and thence through the hatchways into the hold. After a considerable quantity of grain has been loaded, a number of men called trimmers go down into the hold and level off the grain. This process is called trimming. Ordinarily the marine insurance companies require a cargo of bulk grain to be secured from shifting by means of heavy planks laid on top of the loose grain, layers of grain in sacks being stowed on the flooring thus made."

Liquid cargo, such as oil, is loaded and unloaded by means of pumps. The unloading of solid freight such as coal and ore offers greater difficulties than the loading, but here also remarkable progress has been made by the introduction of the "grasshopper" unloader for ore and the application of the bucket chain conveyor to

¹ Frank Andrews, *op. cit.*, p. 41.

the unloading of coal. Grain is of a semi-liquid nature as far as mechanical handling is concerned, and is successfully unloaded both by the bucket conveyor belt and by pneumatic, or suction, unloaders.

Agencies in loading ships.—So far we have concentrated our attention upon the material or mechanical phases of the problem of loading and unloading. Let us now consider the human side. Apart from the ship's agents, dock superintendents and other officials connected with shipping companies there are two main classes of men who figure in this branch of the shipping business—the stevedores and longshoremen. According to T. R. Taylor,¹ the term "stevedore" is properly applied only to a "master stevedore," one who is capable of formulating and carrying out a plan of stowage of a vessel. He has to possess a wide knowledge of commodities, equipment and ships, he must be a good organizer and director of men. Three types of stevedores may be distinguished:²

1. The contract stevedore, who is independent of steamship companies and may take contracts to load or unload any ship.
2. The limited contract stevedore, who will take contracts to handle only certain commodities, such as coal, grain, or lumber, or who specializes in coastwise trade, local traffic, or sailing vessels.
3. The shipping company stevedore or dock superintendent, who is engaged by a steamship company by the year to handle all its freight.

¹ *Stowage of Ship Cargoes*, Department of Commerce, Bureau of Foreign and Domestic Commerce, Miscellaneous Series No. 92, Washington, 1920.

² After C. B. Barnes, "The Longshoremen."

These types merge. Besides regular dock superintendents there are approximately sixty stevedores in New York who keenly compete for the cargoes arriving at or leaving from that port.

The Longshoremen—The stevedores do their work through longshoremen whom they engage. Longshoremen are variously classified according to skill, specialties, functions, etc. The following classifications are given by Taylor.¹

- . Classification based on kinds of traffic.
 - (a) Foreign or "deep-sea" freight;
 - (b) Coastwise freight;
 - (c) Harbor freight (the longshoremen who handle this freight are known as "shenanagoes" and are at the bottom of the ladder, while the "deep-sea" longshoremen are considered superior to those engaged in handling coastwise freight).
- . Classification based on commodities or kind of packages:
 - (a) Specialists in grain, sugar, lumber, oil, explosives, etc.
 - (b) Longshoremen working on fruit-ships are known as "banana handlers or banana fiends."
 - (c) Only a few longshoremen are considered capable of stowing barrels.
- . Classification based on work performed, winchmen, drum-end men, gangway men, longshore sailors, etc.

Stevedoring costs.—The contract on page 262 gives all the information desired regarding the method of calcu-

¹ *Op. cit.* p. 17.

lating the expense of loading and unloading various cargoes.¹

Philadelphia, _____.

Messrs. _____, of _____:

We hereby offer to discharge and/or load your vessels at the port of Philadelphia at the undernoted rates, except when bound by charter, or in the case of strikes, lockouts, or other conditions beyond our control.

DISCHARGING

Bombay, Calcutta cargoes per Calcutta or Bombay ton..	
per ton..	\$0.56
Bale cargo	1.20
China clay .....	.98
Chalk .....	.98
Colombo cargo .....	.75
General cargoes (per ton weight or measurement) ..	
per ton..	1.10
Iron, pig	1.15
Lath	1.50
Ore .....	.75
Steel or iron scrap..do..	2.50
Skins (wet), per ton of 2,240 lbs., C. or B. cargo per ton..	1.10
Skins, if wet, quoted above, if dry on Bombay or Cal- cutta cargo basis.	
Sulphur	1.00
Wool: Compressed	1.80
Not compressed, per bale..	.60
From River Plate ports: Maize and/or linseed, in bags overside..per ton..	1.10
Maize and/or linseed, in bags on docks: Same rate plus labor for truck- ing and piling.	

LOADING

Ammunition and/or explo- sives	per ton..	\$3.35
Dynamite 50 per cent. extra.		
Automobiles	per ton..	
measurement		1.35
Billets, bars, and pig iron..	per ton..	1.51
Beams (structural steel)....	per ton..	2.85
Barrel and/or drums of oil, or other barrel cargoes:		
Full cargoes at refinery—		
From dock (23c. per bbl.)	per ton..	1.15
From dock and lighters (27c. per bbl.).....	per ton	1.35

LOADING—continued.

Part cargoes (29c. per bbl.)	per ton..	1.45
Out of city (30c. per bbl.)	per ton..	1.50
Barbed wire	per ton..	\$1.63
Case oil:		
Full cargoes	per case..	.04
From lighters	do..	.05
Coil wire	per ton..	1.31
Car material	per ton measurement	1.31
Carbon black	do..	1.31
Cotton	per ton..	1.50
Flour and other bagged cargo		
per ton..		1.10
General cargo (weight or mea- surement)	per ton..	1.10
Hay	do..	1.60
Ingots	do..	1.51
Iron, scrap	do..	2.45
Iron plates	do..	1.80
Locomotives and/or machinery or other heavy lifts, includ- ing crane hire, when loaded at Pier G and/or Eddystone, on the entire shipment.		
per ton..		4.80
Lumber	do..	1.50
Meats	do..	1.10
Oil cake	do..	1.10
Oats.....per 1,000 bushels..		7.50
Oats, filling into and stowing in bags and feeders, extra per 1,000 bushels		19.00
Oats, full cargo, bagged, per 1,000 bushels		24.00
Pipe	per ton..	1.55
Rails, under 40 ft. long and rail equipment	per ton..	1.55
Rails, over 40 ft. long and rail equipment	per ton..	2.00
Staves	do..	1.50
Tobacco	do..	1.50
Wheat and/or all heavy grains, per 1,400 bushels		5.50
Filling and stowing in bags and feeders, extra per 1,000 bushels		16.50
Other commodities by special ar- rangements.		

The foregoing rates are based on the usual custom of Philadelphia delivery, and any expenses incurred for trucking, piling cargo, etc., on the dock to be paid for by the ship. (Over six [6] men to each gang on the dock.)

In event of our discharging or loading any vessels at lower rates than those

¹ From T. R. Taylor, *op. cit.* p. 91-2.

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named, we agree to give you the benefit of such reduction, and in case of increased cost of labor, owners to pay such increase.

We agree to give the ships the best possible dispatch and attention. Cargo in peaks, bridges, tanks, poops, lazarets, by day's work.

We are covered by insurance against accidents which may occur to our men while employed by us to comply with the workmen's compensation act in the State of Pennsylvania, for which an additional 5 per cent. will be charged.

Steamships to furnish all necessary steam, winches, runners, and slings for working the cargo. The stevedores furnishing the men to work at the winches, the ship paying the prevailing rates for the commodity handled for each man so furnished. Should steamers' winches not be available, owners to pay the cost of hoisting charges.

Should men be employed by the ship to assist in any work, such men to be paid the prevailing rates for the commodities handled.

LABOR RATES.

	Day work.	Ove- rtime.	Meal hour.	Ove- rtime.	Meal hour.
General cargo per hour..	\$0.85	\$1.30	\$1.70	\$0.50	\$0.85
Foreman, general cargo do....	1.35	2.05	2.70	.70	1.35
Oil, in city do....	1.00	1.50	2.00	.55	1.00
Foreman, oil do....	1.50	2.25	3.00	.75	1.50
Grain do....	.95	1.40	1.90	.50	.95
Foreman, grain do....	1.45	2.15	2.90	.70	1.45

Oil, Point Breeze and Gibsons Point:

\$11.50 per day or one-half day.

\$15.50 per day or one-half day or night or one-half night overtime.

\$2.30 per hour meal hour.

Foreman:

\$15.00 per day or one-half day.

\$22.50 per day or one-half day or night or one-half night overtime.

\$3.00 per hour meal hour.

Explosives:

\$12.50 per day or one-half day.

\$16.00 per day or one half day or night or one-half night overtime.

\$2.50 per hour meal hour.

Overtime, \$1.00 per hour; \$2.60 per hour meal hour.

Foreman:

\$18.00 per day or one-half day.

\$25.00 per day or one-half day or night or one-half night overtime.

\$3.60 per hour meal hour.

Overtime, \$1.50 per hour; \$3.50 per hour meal hour.

The basic day is from 8 a. m. till 5 p. m. (eight hours). All other time is overtime, and the rate for all labor for overtime is governed by the National Adjustment Commission.

This agreement to commence on _____, and to remain in force until _____, 19_____.
Witness:

(Signed) _____

We hereby accept the above offer of Messrs. _____, to do the stevedoring work (except when bound by charter) of all steamers under our management, and subject to all conditions named in this contract.

Witness:

(Signed) _____

Dated at _____, this _____ day of _____, 19_____.

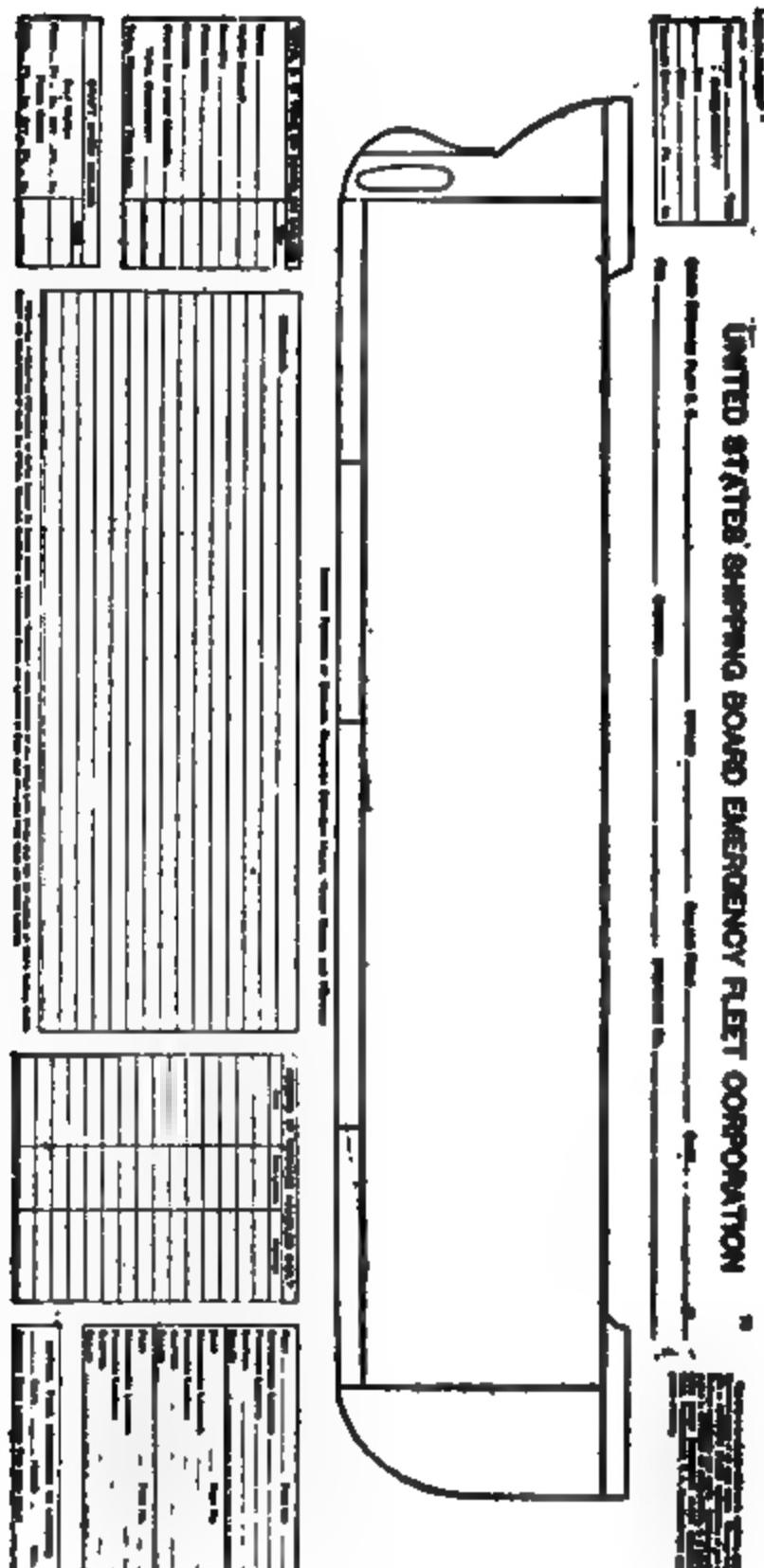
The problem of stowing.—In the case of bulk commodities the question of stowage, i.e., proper distribution, and fastening of the cargo in the ship hold is a relatively simple one. But stowing a cargo of general freight is nothing short of an art. It requires careful planning, which in the stevedore's language is called "stowing the ship on paper." "The work is a good deal like making the pattern for an old-fashioned dissected puzzle map. When the pattern is made, the traffic man's job is to fit the actual pieces of the puzzle together—every piece must fit exactly into its appointed place, and each piece must be at hand when wanted, or the whole job is delayed."¹ It is easy to see why the problem is complicated. Imagine a steamer loading 150 different commodities all of different size, shape, packed in different ways, possessing different qualities, destined to different ports. Unless the cargo is distributed according to a preconceived plan carefully worked out with due consideration to all factors which enter into the matter, the safety of ship and cargo is jeopardized and delay in unloading is unavoidable.

The paper on which the stevedore and the traffic man lay their plans is called the "Cargo Stowage Plan." We reproduce on page 265 the kind which is used by the United States Shipping Board. The original is large enough to provide sufficient space in the vessel outline for the various items of cargo to be stowed. In the case of very large freighters carrying an exceptionally wide range of commodities, several drawings are necessary to assure clarity.

¹ R. E. Annin, *Ocean Shipping*, p. 149.

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CARGO STOWAGE PLAN

UNITED STATES SHIPPING BOARD EMERGENCY FLEET CORPORATION

OCEAN SHIPPING

The stowage plan itself is based upon the information contained in the so-called "Proposed Loading Report." An actual example will convey all desired information:

PROPOSED LOADING REPORT.¹

Cargo to be loaded in and upon the S. S. Helen Angier
Sailing January 20, 1920, for Genoa, Italy.

Voyage No. 2

Date, Dec. 20th, 1919

Total Dead Weight	7,200 tons	Oblig Capacity (Bale)	320,000 feet
Less:			
Fuel	1,000 tons	Less cubic deducted for extra fuel,	
Water	200 tons	crew, quarters, etc.	
Stores	100 tons	Less 10 per cent. Broken Stowage.....	
Total	6,000 tons	Total 297,000 feet	

Broker	Shipper	Packages	Commodity	Total Weight	Meas't Cubic Feet	Permit	Delivery Record	
							Weight	Cubic
L. & M.	Gowanus Export Co.	16 M	Boards	20		✓		
L. & M.	Gowanus Export Co.	2 Cars	Staves	20		✓		
Caldwell	H. B. Steel Co.		Steel Billets	1,000	12,000	✓		
Direct	A. M. Marcy, Co.		Machinery	800	56,000			
Ward	Standard Oil Co.		Oil	500	30,000	✓	300	
D. & G.	Beggerman Bros.		Bale Vests	1,500	75,000		1,500	
Nichols	A. M. Trading Co.		Bale Leather	200	24,000			600
Marsiller	T. G. Sealy		Turpentine	200	12,000	✓	200	
Davies T. & Co.	Pacific Trading Co.	10M Bags	Oil Cake	800	24,000	✓	200	
Davies T. & Co.	Lamboru & Co.		Sugar	500	25,000		300	
A. J. M.	Robinson & Cull		Automobiles	100	15,000			375
Various	Neatle's Food Co.		Condensed Milk	100	5,000	✓	100	
	Various	2,700 Cr.	General	200	15,000			375
				6,000	297,000		4,000	+2,700
								= 7,200

¹ Rate per foot.² Details immaterial in pro-forma.¹ Annin, Ocean Shipping, p. 156

It is impossible to lay down hard and fast rules which must be followed in planning the loading of a general cargo. But, in general, cargo which is to be unloaded first should be on top, provided it is not too heavy. Odor, danger of explosion, leakage, etc., have to be considered, as well as the effect upon the stability of the ship. The diagram on page 267 is a facsimile of a stowage plan properly filled out.

Other aspects of this problem of general cargo will be considered in the Chapter on "Rate Practice and Rate Control."



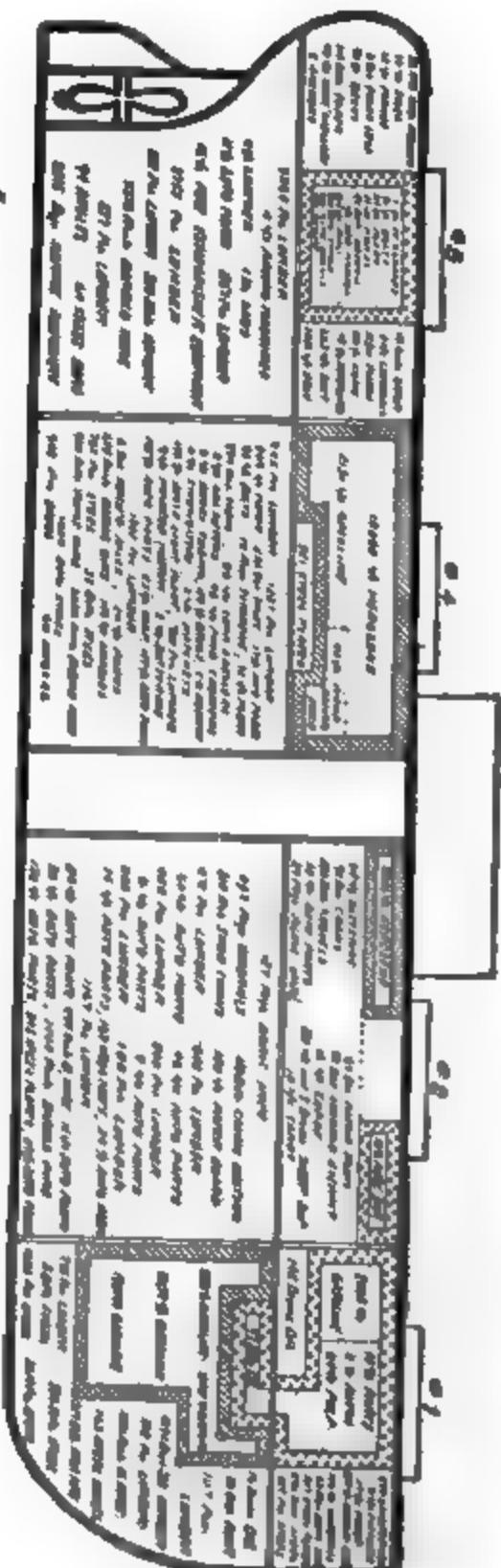
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SLOWAGE PLAN OF VESSEL DISCHARGING AT THREE PORTS

Plan of the Cargo shipped on board the Steamer — COLUMBIA — Continue

THE JOURNAL OF CLIMATE



NAME	SIZE
	REMOVED CARGO
	IN PLATE CARGO
	CARRIED CARGO
	NOT CARRIED CARGO

How to Manage a Ship cargo. By Thomas Kotchwell Taylor.

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PART V
SHIPPING SERVICES



CHAPTER XIV

STEAMSHIP SERVICES AND VESSEL TYPES

Classification of carriers on the basis of service.—The variety of services which in the course of time have come to be required of the ocean carrier has led to a number of more or less sharply distinguished vessel types. In its extreme form this distinction manifests itself in marked differences in ship construction. But, at times, it is merely a matter of the differences of use to which the ships are put. The classification of steamships is a fairly close parallel to the corresponding classification in railroad transportation. The following tabular comparison will make this clear:

CLASSIFICATION OF CARRIERS ON BASIS OF SERVICE

RAIL TRANSPORTATION

1. Slow freight train
2. Fast freight train
3. Freight and passenger train (milk train)
4. Passenger train (carrying mail and express)
 - a. Ordinary passenger train
 - b. Fast through trains

OCEAN TRANSPORTATION

1. Slow cargo steamer
 - a. Run on schedule (cargo liner)
 - b. Not run on schedule (tramp)
2. Express freight line (Lucken-Line)
3. Combination freight and passenger liner
 - a. Primarily freight
 - b. Half and half
 - c. Primarily passengers
4. Passenger liners (carrying mail and express)
 - a. With emphasis on speed
 - b. With emphasis on luxury

The extent to which this division, on the basis of service or operating method, is reflected in the composition of the different types of ships appears from following figures:

VESSEL	Gross Tonnage	Net Tonnage	Dead Weight Capacity	Average Speed at Sea (Knots)	Ind H
Tramp ¹	4,665	2,930	7,800	10½	2
<i>Freight-carrying Liner</i>					
Andrea T. Luckenbach.	10,797	8,309	15,700	13	...
<i>Combination Vessels</i>					
"Breslau".....	7,524.09	4,807.86	8,600	12½	3
"Minnewaska".....	14,317	8,878	15,000	15	..
"George Washington"....	25,569.85	15,378.74	13,300	19½	21
<i>Express Steamers</i>					
"Mount Vernon".....	19,503.22	6,584.44	8,300	23½	45
"Bismarck".....	56,000	24,000	15,000	25	90
"Mauretania".....	31,550	9,145	1,500	25	68

¹Typical tramp, computed from latest available figures, by Engineer's Society of Northern England.

²Approximate figures.

Tramps and liners; their numerical relation.—Exact statistics are available to show the numerical relation of the different classes. The only reliable mate refers to British shipping before the war, and divides the entire tonnage of that country between regular liners with scheduled sailings which trade a defined routes, and tramp steamers which trade wherever they scent a cargo. That distinction between tramp and liner is the grand division into which all ship falls. But in view of the fact that there is a large amount of "loose" tonnage capable of supplementing the liner sailings and prepared for trade at short notice to any part of the world, it is impossible to draw a sharp line of distinction and to arrive at an exact numerical division even between the two types. The only avail-

index of the importance of tramp tonnage is that afforded by the speed of the vessel. Practically all the ships capable of maintaining a speed of twelve or more knots an hour belong to the "liner" type. Before the war they represented 35 per cent. of the British merchant marine. To these should be added a number of slower vessels. It was, therefore, estimated roughly that of the total British tonnage before the war 60 per cent. consisted of "tramps" and 40 per cent. of "liners."

This relation is only slightly altered when expressed in numbers. In 1913 the number of British vessels of over 1,000 tons net was 3,675. These are the ships that count in the overseas trade. Of these, about 1,200 were liners and the rest tramps. Of the liners, again, one-half were at that time certified as foreign-going passenger ships. This would give the following classification for British ocean-going shipping in 1913:

1. Tramps	2,400
2. Cargo liners	600
3. Passenger liners	600

The world's steam tonnage before the war is estimated at 25,000 vessels. Of these, not more than 1,600, or about 7 per cent., were classed as purely passenger or combination passenger and freight steamers. When we wish to apply the British tramp percentage of 60 to the world in general, it must be remembered that, for reasons that will be given below, England predominated in the possession of that particular type of vessel. In other words, the world average for 1913 would undoubtedly be below the British figures, probably considerably less than one-half. This world average, however, was considerably increased when this country

added to the world's merchant marines the enormous fleets of fabricated ships, all of which are of the tramp type.

Service of tramp and liner compared.—Kipling conveys a good idea of the contrast between liners and tramps when he writes:¹

“The Liner she’s a lady, and ‘er route is cut and dried;

"But, oh, the little cargo-boats that 'aven't any man.

"They've got to do their business first, and make the most they can!"

Others have referred to the tramps as "gypsies," or as "the truck horses of the sea." They do the dirty work of the ocean, which fact is sufficiently reflected in their unkempt appearance.

"More often than not the appearance of the craft substantiates its generic name. It recalls the nomad of our highways, being ill-kempt and even at times repulsive in its appearance. Possibly the paint has been battered from its hull by wind and wave, until one is unable to imagine its appearance at the time it left the builder's yard. Its original garb has been superseded by a red rust applied with Father Neptune's brush—salt spray. The deck looks woe-begone, while the engines rattle like shot in a tin can. Yet the vessel is as tight as the glistening lordly liner moored nearby, and the chances are that when at sea, with the elements raging in torment, the insignificant, disreputable-looking tramp is the better seaboat of the two."⁸ But, as always, exceptions prove the rule.

The functions of this ubiquitous craft are described

¹ Rudyard Kipling, *The Liner She's a Lady*, 1894.

² See Talbot, *op. cit.*, pp. 203, 204.

by Sir Walter Runicman, M.P., well known in British shipping circles, as follows:

"The 'tramp' goes everywhere, competes for everything against everybody, cuts into any trade—British, foreign or colonial—whenever he can see a profit, and he is similarly subject to attack with no means of defense except his own efficiency."

Peculiarities of tramp construction.—The typical tramp differs radically in its construction from the passenger liner, or even the cargo liner. It is built with a view to economy—not speed—in such a way as to fit it to as many trades and cargoes as possible. This end is obtained by giving it as high a block coefficient as is consistent with the principles of naval construction. A "block coefficient" or "coefficient of fineness" is a ratio of the actual contents of the submerged portion of the vessel's hull to the contents of the parallelopiped of the same length, breadth, and depth. In the case of express liners this ratio is as low as .6, for racing yachts even .4, but the full-shaped slow freighter reaches a "block coefficient" as high as .82. To make this technical point a little clearer we might say that if we were carving the model of a tramp out of a box-shaped block of wood, we would have to cut away only 18 per cent. of the wood, while, in the case of a liner from $\frac{1}{3}$ to $\frac{2}{5}$ of the wood would have to be removed. The tramp has a flat bottom and the keel is inside, rather than outside, the line of the hull, enabling the ship to store freight in every spot of deck space.

This rather clumsy appearance, while conducive to a high cargo carrying capacity, makes a speed of over $11\frac{1}{2}$ to 12 knots an hour undesirable. On the other hand, from 9 to 10 knots are the minimum required to

assure safe navigation under severe weather conditions. As was pointed out before, the improvement of the marine engine permits of a gradual increase of speed without additional fuel cost. The tendency, therefore, is for newly built tramp ships to be capable of a somewhat higher speed than the older types.

British predominance in tramp shipping.—British maritime supremacy, before the war, was largely due to her predominant position in the ownership of tramp steamers. It is true that if the tramp owners of the world were to meet in common assembly, almost every nationality would be represented, but the British would have a secure majority. It is an interesting study to analyze the reasons for Great Britain's distinct preference for this type of vessel.

From the standpoint of national psychology the Britisher possesses two pronounced traits: extreme individualism and sportsmanship. To own a tramp entails much less loss of individual liberty than does the possession of even a controlling share of a large shipping corporation, such as the steamship lines of to-day tend to be. At the same time, the operation of a tramp is a more risky business, involving a larger amount of aleatory element. That is why it appeals to the sportsman. Thus, tramp-owning has become a tradition in many English families. Moreover, British bankers have accumulated a larger fund of experience in gauging the financial risk incurred in tramp operations and, consequently, are more liberal with their credits.

Then there is the economic side which, of necessity, makes England the greatest employer of tramps. The bulk of both her exports and her imports requires tramp tonnage. We have seen that three-fourths by weight

of the British exports consist of coal, and coal is the natural cargo for tramps. If for no other reason, Great Britain, because of her position in the coal trade, would be the biggest tramp owner in the world. But, also her imports of grain, cotton, ore, etc., necessitate the use of this economical carrier.

What tramps carry.—This brings us to the question of what tramps carry. We may say, in general, that all goods which are transported in such quantities that a ship can be hired or chartered for the purpose of carrying them, are the natural cargo for tramps. This means, primarily, bulk commodities such as grain from the Black Sea, Argentina, Canada, United States and India; ore from Spain, Cuba, Chile, and Sweden; timber and cotton from Gulf ports; nitrate from Chile; soya beans from Manchuria, also clay and sugar and, above all, coal.

But tramp cargo does not of necessity have to consist of bulky raw materials; if a manufacturer has to ship enough heavy goods such as steel rails, locomotives, agricultural machinery, etc., to fill a ship, he almost invariably charters a tramp. The seasonal concentration of their shipments makes the International Harvester Company a typical example of this case. The United States Steel Product Company, a subsidiary for foreign trade, of the United States Steel Corporation, because of its exceptional volume of business, is also occasionally in the charter market for a tramp or two.

On the other hand, not all bulky commodities are exclusively transported by tramps (as grain, oil, etc.). In a previous chapter we referred to the practice of liners taking parcel lots of grain to fill their "distress space." As a rule the liner, because of good profits from the

passenger and general freight business, can successfully compete with the tramp by undercutting their rate. This is particularly true of the lines serving New York, which enjoy the benefit of well-balanced outbound and inbound flow of commodities. Even coal, under certain circumstances, may be carried by cargo liners. More expensive bulk commodities such as rubber, tin and even wool generally prefer the liner.

Besides grain, an increasing number of other bulk commodities are either deserting the tramp or, because of their nature, are unfit to be carried in any vessel that is not especially constructed for them. That is particularly true of such commodities as fuel oil, lubricants, cocoanut, cottonseed, soya bean, other edible oils, and molasses.

Economies of the tramp.—But, for a large variety of bulk commodities, more especially of the cheaper class, the tramp is indispensable because of the low price at which it can offer its services. This cheapness is based upon the economy of construction, operation and management of the tramp vessel. We have seen that the tramp is built with a view to maximum carrying capacity, not for comfort or speed. Because of the low initial cost of construction, the tramp can lead a leisurely life and does not have to rush back and forth like our ocean grey-hounds, every hour of whose idleness means a loss of large sums in interest and depreciation. The low speed of the tramp is his greatest economy, as far as operation is concerned. It means less coal per horse-power hour and more space for cargo. Additional economy of operating results from the absence of a definite schedule, such as binds the liner to her hard and fast route. The liner must start as nearly as possible on the

stroke of the hour advertised, cargo or no cargo. The tramp is free from such expensive obligations. Besides, the tramp may save in port charges by applying to ports less expensively equipped than those frequented by the large liners. Finally, the tramp saves management expenses. He does not require advertising; his owner does not need to make a dazzling display with attractive office buildings, nor does he have to own expensive piers and other terminal facilities.

The tramp losing ground.—In spite of these economies, the tramp is losing ground. For a number of years preceding the war there have been tendencies towards:

- (1) The gradual conversion of tramps into regular liners.
- (2) Successful competition of an established line where tramps have succeeded in opening up a more or less regular trade.
- (3) The absorption of tramp vessels by regular liners.¹

We are not referring here to the practice of "keeping the tramp on the beat," which has always been done when the facilities at the disposal of the line concerned were insufficient to cope with the "peak load" at the height of the season or on the crest of a prosperity wave. That is simply a temporary expedient which has its counterpart in the practice of "sending a liner tramping." This is done only in the case of the lowest type of line vessels, the pure cargo liner, and of the most respectable of the tramps.

This interchangeability is nothing new. But besides this, the increasing regularity of trade between points

¹ See *Report of British Committee Appointed by Board of Trade, op. cit.*

where, formerly, only an occasional connection was established, has led to a permanent encroachment by the liner upon the tramp domain. Modern marketing methods, in many lines, are based upon such punctuality and reliability of foreign shipments as only liners can assure. Furthermore, the tendency of the times is towards combination and concentration. This frequently leads to absorption of tramp tonnage by large companies owning regular liners. Finally, we must not forget the effect which the present transition from coal to oil is bound to have upon tramp operation. It will restrict overseas transportation of coal and thus curtail one of the tramp's most important duties.

To acknowledge the existence of these tendencies does not, however, imply any prophecy as to the complete disappearance of the tramp.

Two qualities serve as a guarantee, not only for the continued usefulness of this type of vessel, but also assure it a wide field of activity. These qualities are cheapness and flexibility. The tramp is the chosen instrument for the transportation of seasonal bulk traffic. That includes most cereals and fibres. It does not pay to build up a line service for seasonal trade. Seasonal changes do not fit into schedules; they necessitate flexibility on the part of the carrier, and that is the tramp's strongest side. To the extent that the coal trade provides merely the return freight for these seasonal commodity movements, that important branch of world shipping will continue to be the mainstay and salvation of the tramp owner.

The cargo liner.—The cargo liner, as we have seen, does not necessarily have to be a different type of vessel from the tramp. It may simply be a difference in

in ship types. But the modern tendency construction of vessels best suited to the to which they are to be put. Mr. Roseme Director of Operations of the Shipping intended¹ upon this point as follows:

—What is the liner-class cargo ship?

-A ship with a large steamship radius, and special dling a variety of cargo, according to the trade or Philippine service it is very desirable to have some or tobacco, a product of those islands. In other unt of reverse of seasons, it is important to have e for fruits and other perishable cargo. In many rich we are developing, while passenger service is it is secondary to cargo, but both features should means limited passenger accommodations on large ships called "liners."

—Are they of any particular size?

-Yes, sir. They might be generally described as fourteen thousand tons deadweight.

—What speed?

-It is a moot question whether they should be 14, not less than 13 knots. Our cargo ships are close below 9 knots.

es of cargo steamers.—This tendency to- zation is following two distinct directions. And, we have to do with the adaptation to ; on the other hand, with the adjustment i traffic conditions prevailing on the par- which the vessel is to cover. In its extreme ptation to the cargo has led to the devel- : tanker or the refrigerator ship. But we to confine ourselves to such cases where

¹ before the Senate Committee on Commerce and an American Merchant Marine, pp. 1953, 1954.

the nature of the cargo demands an entirely new type of vessel. We refer here to the development of such types as the turret steamer, the trunk steamer and the self-trimming vessel. All of these vessels are built to carry loose cargo, such as ore or grain, which are apt to cause difficulties in rough weather by shifting from one side to the other. Incidentally, it may be mentioned that the turret vessel with its narrow turret deck and rounded harbor deck was originally built mainly for the purpose of evading the measurement rules of Great Britain.¹

The first turret steamer was built at Sunderland in 1892. The type proved very popular until the British measurement rules were changed to meet the evasion tonnage box. Trunk steamers derive their name from the trunk erection which is about seven feet high and half the width of the upper deck on which it is located. The self-trimming feature usually consists simply of a clear hold arranged in such a way that the cargo, by its own weight, distributes itself evenly throughout the hold, filling all corners. Ships which are intended to carry heavy commodities such as ore are sometimes constructed so as to overcome the difficulties arising from the stability excess. Owing to the low factor of ore it takes a load filling only a small part of the space available to weigh the ship down to her mark. To meet these difficulties a ship type has been developed,

¹ At the Nautical Marine Exposition held in New York in April, 1920, there was exhibited the model of an "Ischang Junk" which is at the same time the Chinese prototype of both the turret deck ship and the tank vessel. The turret deck serves the double purpose of evading the tax on salt water carriers by the junks and of providing protection against spilling. (See *Nautical Gazette*, April 24, 1920, p. 631.)

built on the cantilever principle, which is described as follows:

"This type has been constructed for trades where either the outward or the homeward trip has to be made in ballast owing to lack of cargo. For instance, the United Kingdom takes very much more in bulk and weight from the United States than she sends there; the consequence is that some ships have to cross the Atlantic in ballast; the ordinary ballast tanks formed by the double bottom of a ship are not sufficient when crossing a stormy ocean. A steamer drawing but little water will in heavy weather run the risk of breaking her shaft or losing her propeller, owing to the propeller racing clear of the sea when the ship is pitching heavily.

"The cantilever principle of construction provides the extra ballast necessary for such voyages, this being stored in wing tanks which run fore and aft on each side of the ship right under the main deck, and extending from the ship's side to the line of the hatch coamings. They thus form two great box-girders which add considerably to the ship's strength both transversely and longitudinally. So great is the additional strength that hold-pillars, beams and web frames are not needed, and thus the hold is perfectly clear for storage purposes. Very long and wide hatchways can be arranged for in vessels built on this principle; and as the tanks are not included in tonnage measurement, steamers can be built on this method which will carry three tons deadweight to every net register ton."¹

Profit-earning capacity of cargo liners.—The loss of available cargo space is somewhat neutralized by the fact that the ballast tanks, extending all the way up

¹ Kirkaldy, *op. cit.*, p. 111.

the side of the ship, are exempted from measurement. Such an arrangement is particularly advisable in cases where one-half the round-trip has to be covered in ballast. With this we have touched upon the second type of vessel adaptation, namely, adaptation to peculiarities of specific trade routes.

In view of the expense necessarily involved in constructing specific types, the question of paying value is an important one. As a rule, these ships pay only in such cases where steady, all-year-round employment is guaranteed. It is not surprising to find, therefore, that most of these special cargo carriers are owned by firms which, at the same time, control the cargo, such as the tank fleets of the oil companies, the molasses tankers of the sugar refiners, the "Cubore" fleet of the Bethlehem Steel Corporation, and the self-trimming colliers of certain exporters and importers. But the modern cargo liner also, acting as a common carrier, tends to be somewhat differently constructed from the all-embracing tramp. The specialty of the cargo liner is not bulk cargo but general freight. To reduce the stay in port to its minimum, cargo handling equipment and open hatches are provided. The following description of the "Andrea F. Luckenbach" will give an idea of an up-to-date cargo liner.

A typical modern cargo liner.—The "Andrea F. Luckenbach" is one of a fleet of nine American express freight twin-screw steamers, ranging from 11,500 tons dead-weight to 14,000 tons, the latest of which are exclusively oil-burning vessels driven by geared turbines capable of sustaining a speed of 13 knots an hour. The oil-carrying capacity of the "Andrea F. Luckenbach," in her double bottoms and service tanks, is 3,000 tons,

while the daily consumption does not exceed 47 tons, giving a cruising capacity of over 6 days. The "Andrea F. Luckenbach" measures 8,309 net registered tons, 10,797 gross registered tons, and has actually carried as much as 15,700 tons of cargo. Because of her excellent cargo handling equipment and open hatches, twelve gangs of men can load or unload 4,500 tons in ten hours. The holds are equipped with electric blowers to keep lard or similar cargo cool.

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CHAPTER XV

PAPERS AND DOCUMENTS

Importance of charter party.—The various freight services performed by shipping companies can best be explained by going over the various papers and documents used. Just as the freight business itself is divided into tramp and liner business, so also the papers divide themselves along these lines. In view of the fact that, as yet, a large quantity of goods is carried by tramp ships, the "charter parties," that is, the documents which form the contracts between the ship's owner, or his agent, and the charterer, the man who leases the ship, are, in a way, the most important documents in the shipping business. The term is derived from the Latin, "charta partita," so-called because in the olden days the contract was divided, or parted, into two halves, one being kept by the vessel owner, the other by the charterer.

Trip and time charter.—There are two general kinds of charter parties, the trip charter and the time charter. As the name implies, in the former case, the ship is leased for a voyage, either single or round-trip, the route is specified, although usually allowing for certain modifications. Where a time charter is used, the vessel comes into the possession of the charterer for a stipulated period of time, the usual arrangement being that the owner of the ship supplies the crew, their food and maintenance, and keeps the ship in repair, while the charterer furnishes the fuel and pays the port and terminal charges. Under

the terms of the trip charter, the owner operates his vessel and remains in possession of it. In this case the charge which the charterer has to pay is based upon the unit of cargo carried; that is, a ton, bushel, quarter, or hundred pounds, as the case may be. Time charter rates, on the other hand, are based upon the deadweight ton. Trip charters are much more common, as time chartering places a greater risk upon the charterer than the experienced shipper, under ordinary circumstances, is willing to take upon himself.

Robert Edwards Annin in his book "*Ocean Shipping*" distinguishes four main classes into which nearly all charter parties may be divided:

- (1) **The Bare-Boat form.**—This is comparable to "the lease, for a given period, of an unfurnished house, the tenant paying all expenses and defraying the cost of insurance and repair."
- (2) **The time charter.**—(Explained above.) "It may be likened to the leasing of a furnished house where general service is supplied by the landlord."
- (3) **The net form charter.**—This is a trip charter, the ship being hired for a given voyage. Under this form, the operating expenses go to the owner, the voyage and cargo expenses to the charterer. "The net form charter resembles a hotel on the European plan, where space, heat, light and service can be had for a longer or shorter period on fixed terms, and everything else is charged as an extra."

- (4) The gross form charter.—"Here the owner pays all regular expenses. This is like an American plan hotel where the guest pays a given rate a day, which includes everything except breakage and a few incidentals."

Charter parties vary according to the peculiarities of trade and are influenced by customs and usage prevailing in certain sections of the world. The usual development has been toward increasing uniformity. Trade organizations such as the Chamber of Shipping of the United Kingdom, the Baltic and White Sea Conference,¹ the New York Produce Exchange, etc. have worked out model charter parties which, through the adoption by the majority of the members of these bodies, have become the norm for specific trades. The following are a steamer and a sailing ship charter.



United States and Australasia Steamship Company

8-10 BRIDGE STREET

CHARTER PARTY
D

NEW YORK-AUSTRALASIA
COMPANY

New York.....192...

IT IS THIS DAY MUTUALLY AGREED between.....
of.....Owners of the British Steamship
.....of.....classed 100-A 1 of
the measurement of.....Tons Net Register having.....Tons Per-
manent Bunkers, having 'ween decks laid and being provided with water ballast
if required, able to steam at the rate of not less than ten knots per hour at
sea fully loaded now.....and the
UNITED STATES & AUSTRALASIA STEAMSHIP COMPANY OF NEW YORK.
as Charterers of the said vessel as follows:

- That the said Steamship shall proceed with all speed to NEW YORK (or Baltimore if so ordered under Clause 25), and as conditions precedent, being tight, staunch and strong, and classed as above, and

¹ See Appendix C.

A Commission of 5% upon the amount of Freight, Dead Freight, and Demurrage under this Charter is due upon
 Charterer's loss or
 Steamer lost or
 damaged.

in every way fitted and in order for the voyage, shall in compliance with orders given to Captain, upon application to Charterers (the Steamer having all holds and hatchways ready and gear rigged for taking in Cargo), proceed to a loading berth or berths at the appointed pier, and/or in such dock as Charterers may direct (and/or in the River, if required by Charterers), and there take on board all such Cargo as the said Charterers or their Agents shall tender (including any Deck Cargo, at Shippers' risk, and Live Stock), the Charterers having the full reach of the Vessel's Holds, Decks, and all extra spaces available for cargo from Stem to Stern.

2. The owners guarantee that the Steamer shall be able to carry a dead weight of not less than tons of Cargo, exclusive of tons of coal for the voyage when leaving Port of Loading, which Owners shall take for their own account in permanent and/or temporary bunkers and/or on deck; and that they will place at Charterers' disposal not less than cubic feet of grain hold space, exclusive of peaks, alley ways, and other spaces. The said space is to be measured off from deck or ceiling to top of beams and skin of ship, and said dead weight capacity and available space to be mutually agreed in writing before lay days commence. All bunkers, temporary or permanent, shall be fixed and filled, and all coal for the voyage shall be on board before lay days commence. The Owners to remove all movable stanchions, ladders, and wooden bulkheads required by Charterers.

3. Upon receipt of despatches, &c. (for the preparation of which Charterers shall be allowed 24 hours after completion of loading, Sundays and holidays excepted), the Steamer shall proceed at her best speed and with all possible despatch to ports in Australasia at Charterers' option as per Clause 5, discharging at each port, at the Wharf or Wharves appointed by the Charterers' Agents, the Cargo for that port in the usual and customary manner agreeable to Bills of Lading, and so end the voyage. Discharging ports to be in geographical order. Where the term Australasia is used in this agreement it is understood to include Tasmania.

4. Cargo to be brought to and taken from alongside Ship as customary at Merchants' risk and expense.

5. Freight to be a lump sum say:—

- £.....if Steamer discharges at.....ports in Australia not west of Melbourne via Panama Canal.
 - £.....if Steamer discharges at.....ports in New Zealand and.....ports in Australia not west of Melbourne via Panama Canal.
 - £.....if Steamer discharges at.....ports in Australia.
-
.....
.....

To be paid in New York as follows:

ONE-THIRD (1/3) less 3% per cent to cover interest and insurance with demurrage at loading port, if any, to be advanced 10 days after final departure of the steamer from United States. Bills of Lading, as presented by Charterers having been duly signed; ONE-THIRD (1/3) in New York two months after sailing of steamer without discount, and the BALANCE after right and true delivery of the cargo in Australia and/or New Zealand less 3% per cent. commission. Any Freight which may be payable by Bills of Lading at ports of discharge, not exceeding the said balance, to be asserted by Owners as part payment of said balance without recourse to Charterers. The owners to pay all port charges, pilotages, canal dues, and all customary charges paid by Steamers, and to pay Charterers an address commission of 2% per cent on the amount of Freight, Dead Freight, and Demurrage, to be deducted from the first payment of Freight.

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6. The Freight under this Charter is based on the above guarantees by the Owners (Clause 2) as to dead weight and space, and it is agreed that a *pro rata* reduction is to be made for any shortage in weight or space. All spaces tendered in fulfillment of guarantee in Clause 2 must be suitable for the carriage of ordinary General Cargo and such as will permit of issuing under deck bills of lading and must have a clear entrance for Cargo measuring not less than four feet by three feet. In the event of peaks being tendered in fulfillment of space guaranteed as per Clause 2 only one-half of the measurement thereof shall count.

7. Charterers' liability under this Charter to cease on payment of aforesaid Advance Freight, except that they shall remain responsible for demurrage in loading and for such portion of the Chartered Freight on the Cargo delivered as shall be in excess of the total amount of Freight received by the Bills of Lading upon the Cargo shipped.

8. Steamer to be consigned to Charterers or their Agents at Ports of Loading upon the usual terms—say twenty Guineas and Cash for Steamer's disbursements, if required, shall be advanced at customary rate of exchange by Charterers, subject to a commission of 2½% thereon, and the amount of disbursements so advanced may be deducted out of the Advance Freight. The vessel to be subject to all usual Custom House and other charges, and to pay advertising and other usual expenses as customary with Steamers loading on the berth, and all commissions and charges under this Charter-Party may be deducted from the Freight. Steamer to pay usual Wharfage at the loading pier.

9. Charterers to have option of ordering Steamer to three additional Ports of Discharge as above, paying £100 extra Freight for each additional Port so used, and if Steamer discharges at less than the number of Ports specified, as per Clause 5, a reduction in Freight to be made at the same rate for each Port saved. If Steamer discharges in New Zealand, Charterers have the option of ordering Steamer to proceed first either to the most northern or to the most southern Port, but the subsequent Ports to be taken always in geographical order. If, at any Port, Steamer is ordered to discharge at more than one Wharf, Charterers to pay any additional expense of shifting.

10. Charterers to have the option of cancelling this Charter-Party should the Steamer not be in all respects ready at her loading berth before noon.....

11.working days (Sundays and holidays excepted) are to be allowed the said Charterers for sending the Cargo alongside the Steamer; the said days to be computed from noon—but not less than twelve hours (Sundays and holidays excepted)—after the Captain has lodged written notice at the Charterer's office that the vessel is at her loading berth with coals on board for the voyage, and being in all respects ready as per Charter-Party, but not before the Such notice to be given between the hours of 10 a. m. and 5 p. m., but not after 1 p. m. on Saturday. Overtime to be at Owners' expense. Gunpowder, Ammunition, and/or explosives, to be taken on board in the River in the customary manner without counting time so occupied as lay days. Magazine if required, to be provided by Charterers.

12. Demurrage to be paid at the rate of..... Pounds per running day, and *pro rata* for parts of a day and despatch money to be paid at the same rate per running day saved and *pro rata* for parts of a day. Charterers to have option of Ten (10) extra lay days. Sundays and holidays excepted, at one-half ($\frac{1}{2}$) demurrage rate.

13. Charterers shall not be responsible if the ship be detained by Strikes, or Lock-out of Workmen, Ice, Rain, or Fog, or any other cause whatsoever beyond Charterer's control and they shall not be responsible if Shippers are prevented from sending or getting Cargo alongside, or if any delay or hindrance occurs in the loading by reason of Frosts, Floods, Bad Weather, Political Disturbances, Riots, or accidents, and any time the Steamer may be delayed from such causes shall not count as lay days.

14. The discharge of the Steamer in Ports abroad is to be according to the custom of the Ports, and at the risk of the Owners, both as to time and method of discharging and the Charterers are not to be subject to demurrage at discharging ports for any cause whatsoever.

15. Charterers or their Agent to nominate the Stevedores at Ports of Loading and discharge, and owners agree to employ the same under a penalty of £100 for each port, for breach of this condition, the Ship paying forty cents per ton at Ports of Loading, and current rates at ports of discharge. Loading, Stowing and Discharging of Cargo are to be entirely at Owner's risk and the Stevedores being under the direction of the Master, the Owners are responsible for improper stowage or other consequences. Steamer to give use of Steam Winches and provide Coals, Donkeyman and Winchmen, as required. Any extra expense necessary for loading, stowing and/or discharging pieces over five tons weight shall be paid by Charterers.

16. The Master or Owner to attend daily, or when requested, at the Charterer's or Agent's Office to sign Bills of Lading as presented and as customary, and at any rate of Freight, without prejudice or reference to this Charter, but Charterers, or their Agents, are hereby authorized to sign Bills of Lading on behalf of the Master and Owners, in accordance with Tally Clerks' returns. Tally Clerks at Owner's expense shall be nominated by Charterers to measure and take a correct account of the Cargo as received; this account shall be binding on the Owners, and a copy thereof, with measurements, shall be handed to the Charterers as required by them.

17. Dunnage and Mats as required to be provided by the Owners, at their expense, and the Steamer before completion of loading, or when required by Charterers, to have water ballast tanks empty to satisfaction of Charterers.

18. The Owners agree to hold Charterers and their Agents free of, and indemnified against, claims arising from desertion, illness or leaving behind of crew or other persons or for loss or damage to or over-carriage or wrong delivery of cargo arising through the act, neglect, or default of Captain, Officers or crew, or from any cause whatever after the goods have been delivered to the Steamer; and for Customs Duties levied by Colonial authorities in respect of manifested goods not landed or of pillaged goods, or in respect of any claims for goods which are manifested and not delivered in good order and condition, also for any fines, penalties, claims or liabilities incurred or for which either of them may be held responsible arising out of or connected with restrictions imposed by the Australian, New Zealand or other Government, with regard to Asiatics or other aliens on board the Steamer; also to provide Charterers and their Agents with funds for the settlement of all claims arising as set out in this clause and/or for the ship's ordinary disbursements.

19. Steamer is to hoist the Line flag of the Charterers, and funnel to be painted as required by Charterers at Owner's expense.

20. The Vessel to be consigned at Ports of Discharge to Agents appointed by Charterers, whom the Master and Owners hereby agree to accept as the Agents of the Vessel at the respective ports, upon the usual terms—say, twenty Guineas at each Port, and the usual charge (or fee) for Customs work.

21. The Act of God, Perils of the Sea, Fire, Barratry of the Master and Crew, Enemies, Pirates, and Robbers, Arrests and Restraints of Princes, Rulers and People, and others, Accidents of Navigation excepted; Strandings, Collisions, and all Losses and Damages caused thereby are also excepted, even when occasioned by negligence, default, or error in judgment of the Pilot, Master, Mariners or other servants of the Shipowners; but nothing herein contained shall exempt the Shipowners from liability to pay for damage to Cargo occasioned by bad stowage, by improper or insufficient dunnage or ventilation, or by improper opening of valves, sluices and ports, or by causes other than those above excepted; and all the above exceptions are conditional on the Vessel being seaworthy when she sails on the voyage, but ~~and~~

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latent defects in the machinery shall not be considered unseaworthiness, provided the same do not result from want of due diligence of the Owners or any of them, or by the Ship's Husband or Manager. Owners agree to hold Charterers indemnified in so far as the said Negligence Clause may be contrary to the laws of the United States, and to accept the usual Line form of Bill of Lading as customary in this Trade, with the conditions therein, and the same to form part of this Agreement.

22. The Steamer has liberty to call en route at any Port or Ports (but not in South Africa) for Coal, to sail without Pilot, to tow and be towed, and assist Vessels in all situations.

23. Average (if any) to be settled according to York-Antwerp Rules, 1890 and Antwerp Rule, 1908.

24. Penalty for non-performance of this Agreement, the estimated amount of damages.

25. Charterers have the option of ordering the steamer to load part cargo at Baltimore, steamer afterwards completing loading at New York, or of ordering steamer to complete loading of Baltimore after loading part cargo at New York. Should Charterers avail themselves of this option, they are to pay Owners an additional lump sum freight of Two Hundred Pounds (£200), and all above conditions of Charter Party are to apply both to loading at Baltimore and New York. Time occupied in shifting ports not to count as lay days. This option to be declared by the Charterers on written application by Owners two days before the steamer leaves, or if ordered to Baltimore from New York, two days before completion of loading at New York.

Witness to the signature of

Witness to the signature of



This Charter Party, made and executed at New York the _____ day of

_____, 19_____, between _____ Agent,

for, and on behalf of _____ Owners of the Ship, or vessel

called _____ of _____ tons, or thereabouts,

register measurement, guaranteed to carry _____ tons deadweight of cargo,

cleaned _____ and new _____

and the **UNITED STATES & AUSTRALASIA STEAMSHIP COMPANY OF NEW YORK**, as

Charterers of the said vessel as follows

- That the said vessel, guaranteed by the Owners to be in a sound and seaworthy condition, shall be kept tight, staunch, well fitted, tackled, and provided with every requisite, and with men and provisions necessary for such a voyage as hereinafter mentioned, shall with all convenient speed proceed to New York, and there at such proper berth, in such dock and/or in the river as ordered by Charterers, receive and take on board, a full and complete cargo of lawful merchandise, and being so loaded shall therewith proceed with all possible dispatch to Fremantle and/or Adelaide and/or Melbourne and/or Sydney and/or Brisbane as ordered on signing Bills-of-Lading, but not more than two ports of discharge in all.

upon the signing thereof.

2. That the whole of said vessel under deck from stem to stern, including the poop and compartments, shall be at the sole use and disposal of the Charterers during the voyage aforesaid, with the exception of the necessary and usual accommodations for the master, officers and crew, and also room for the stowage of sails, cables, provisions, water, etc., for the ship's company for this voyage, which shall not exceed the bulk of..... tons of 40 cubic feet. Vessel to receive all such lawful goods and merchandise as the Charterers or their agents may think proper to ship, and that no other goods or merchandise whatever shall be laden on board, nor passengers taken, otherwise than from the Charterers or their agents, without their written consent.

3. In case, prior to loading, vessel should meet with accident and/or be in such condition that underwriters decline to insure cargo at customary rates for the intended voyage, Charterers shall have the option of cancelling or maintaining this charter.

4. Vessel to haul to loading berth, or berths, designated by Charterers at her own expense; but if required to move more than once, Charterers are to pay the towage, and further that when loaded, cleared at Customs and Charterers' papers have been delivered to master, the vessel is to proceed to sea within forty-eight hours, wind and weather permitting, or pay Charterers full demurrage, at a rate as hereafter stated.

5. The owners, at their risk and expense to employ, in loading at New York, stevedore named by Charterers (but to be under direction and control of the master of the ship), at the rate of..... cents per ton, also to employ the necessary clerks, to be nominated by Charterers, to take account of and to measure cargo at not exceeding current rates.

6. Vessel to discharge at any wharf, or place where she can safely get, designated by Charterers' Agents, commencing twenty-four hours after berthing, and notice in writing given, and to continue with customary dispatch in accordance with the regulations of the port; ship to work overtime if required by Charterers or their agents at port of loading and/or discharging; if at any port vessel is ordered to discharge at more than one place Charterers to pay cost of Shifting. Vessel to employ stevedore appointed by Charterers' Agents at port of discharge, but the charge not to exceed that of other equally reliable stevedores. Any movable beams, stanchions or ports, to be removed and replaced at ship's expense, if required by Charterers. Proper dunnage and shingle ballast for the voyage to be provided by the vessel, and only the quantity necessary for the safety with the cargo furnished to be retained on board.

7. The Charterers engage to pay to the owners, or their agent, for the charter or freight of the said vessel for the voyage aforesaid, the lump sum of \$.....

.....
.....
.....
.....
.....

In full of all port charges, pilotages and other expenses as customary: Charterers have option of ordering vessel to discharge at one port only, in which case freight will be reduced by \$..... Ports to be in geographical order and sufficient cargo to be left on board to enable vessel to sail in safety to her final port of discharge.

8. Payment thereof to be made in New York as follows: At least one-third, five days after dispatch and final departure of the vessel from New York in cash, less five per cent. discount, and any balance by Bills-of-Lading bearing freight payable abroad and/or in cash, at Charterers' option after right delivery of the cargo at final port of discharge.

9. Charterers' responsibility to cease when cargo is all on board, and bills of lading signed, ship having a lien on cargo for all freight, dead freight and demurrage.

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10. The master to sign Bills-of-Ladings for the cargo as presented at any rate of freight without prejudice to this Charter Party, and for this purpose to attend at the Charterers' office daily, or oftener if required. After the vessel has been dispatched the Charterers may sign Bills-of-Lading as agents for and on behalf of the master and owners, they guaranteeing same to be made out in accordance with the mates receipts and/or Records. Such Bills-of-Lading to be of like effect at port of discharge as if signed by the master.

11. The owners to pay to the Charterers' order when and where required an address commission of $2\frac{1}{2}$ per cent. on total amount of freight, dead freight and demurrage under this charter. Ship to be consigned to Charterers' or their agents at port of loading and (inwards only) at port of discharge, paying them the usual Customs and Agency fees.

12. Charterers shall be allowed for the loading of the vessel lay days as follows, that is to say: working days for loading, (Sundays and holidays excepted) commencing at New York, twenty-four hours after ship hauls to loading berth, with ballast on board and levelled, and ready to receive cargo, but not before One additional working day to be allowed Charterers to clear the vessel at the Custom House (and if necessary to put in cargo,) which is not to be counted as a lay day. Charterers to have the option of five additional lay days for loading under this charter at \$ per day used.

13. In case the vessel is longer detained than the lay days herein provided for, the Charterers agree to pay demurrage at the rate of \$ per day, day by day, for every day so detained (Sundays and holidays excepted), provided such detention shall happen by default of the Charterers or their agents, and for lay days not used, and allowance of one-third of demurrage to be made to Charterers.

14. The cargo shall be received and delivered within reach of the ship's tackles at the ports of loading and discharging. Should lighterage be necessary, only sufficient cargo to be discharged to enable vessel to proceed to place or wharf designated by Charterers' Agents, and there complete her discharge, such lighterage to be at risk and expense of the cargo.

15. If required by Charterers (vessel being ready), she is to haul to berth for loading, without prejudice to the time of commencement of lay days. Charterers paying ship's wharfage for any excess of days in berth over and above those stipulated for in the charter.

16. Charterers shall not be responsible if the ship be detained by strikes, or lock-out of workmen, ice, rain, or fog, or any other cause whatsoever beyond Charterer's control, and they shall not be responsible if shippers are prevented from sending or getting cargo alongside, or if any delay or hindrance occurs in the loading by reason of frosts, floods, bad weather, political disturbances, riots or accidents, and any time the ship may be delayed from such causes shall not count as lay days.

17. If any cargo should fail to be delivered at destination or lost by excepted perils, or sold short of destination on account of damage, including risk of fire during the voyage or whilst cargo is in course of discharge, a reduction shall be made from the amount due under the charter, such reduction to be in the same proportion to the total sum due the vessel as such short delivered cargo bears to the whole cargo on board.

18. It is also mutually agreed that this charter is subject to all the terms and provisions of, and all the exemptions from liability contained in the Act of Congress of the United States, approved on the 13th day of February, 1893, and entitled, "An Act relating to Navigation of vessels, etc." This charter is subject to the rules of the New York Produce Exchange including strikes. Vessel to haul to Oilyard if ordered by Charterers, and to clear at New York Custom House in their name. Average, if any, according to York/Antwerp Rules of 1890, and Antwerp Rule 1903.

19. Charterers to have the option of cancelling this Charter-Party should the vessel not be in all respects ready at her loading berth before noon on.....

20. The act of God; restraints of rulers, princes or peoples; enemies; loss or damage from fire on board, in hulk or craft, or on shore; collisions; any act, neglect or default whatsoever of Pilots, Master or crew in the navigation of the ship, in the ordinary course of the voyage; and all and every the dangers and accidents of the seas and rivers, and of navigation of whatever nature or kind excepted.

21. Penalty for non-performance of this agreement estimated amount of freight.

22. Vessel to be loaded under supervision of the Board of Underwriters of New York.

Witness to the signature of

Witness to the signature of

Important clauses explained.—It would lead us too far to analyze in detail the various clauses which are contained in modern charter parties; however, attention is directed to a number of more important items appearing again and again in charter parties. In the first place, the term "lay days" should be explained. It refers to the time allowed to the charterer for either loading or unloading, sometimes both, but usually to the number of days allowed for loading. "Lay days" are calculated either in "running days," that is, consecutive days, or in "working days," that is, such days as are usually devoted to work at the place where the vessel is loaded. Usually the demurrage allowance is made to compensate the owner for the loss of wages, insurance provision, etc., incurred because of the delays in loading. On the other hand, the charterer may receive "despatch money" in case he is able to load within less than the stipulated number of "lay days." We reproduce here two charter parties, one used for steamships, the other for sailing vessels. These documents may serve as an illustration of the details of the transaction.

Terms used in the charter business.—The British

weekly shipping journal, *Fairplay*, has published a list and full explanation of abbreviations used in connection with the charter business, the most important of which are given below.

IMPORTANT ABBREVIATIONS COMMONLY USED IN CHARTER BUSINESS

C.f.o.—Cork for orders.

o.c.—open charter.

d.b—Deals and boards.

d.b.b.—deals, boards and battens.

c.p.d.—charterers paying dues.

s.p.d.—shipowners paying dues.

C.f.o. (Cork for orders) implies that the vessel is on charter, as, for instance, C.f.o. 3s. 3d. means that, if the boat is ordered to proceed to Cork for orders to discharge at a port in the U.K. Cont., she gets 3s. 3d if ordered from there to a U.K. port, 10 per cent. additional if to a Continental port, but if ordered direct from loading port to U.K. there is 3d. reduction (3s.), and if to the Cont. no reduction (3s. 6d.). This form of charter is very seldom used, and after the war it will probably become extinct, if it is not already so.

n.c. (new charter) refers to the new charters in the Black Sea, Azoff, and Danube trades, and implies amongst other things that the vessel has to call at Gibraltar for orders to discharge at a port between Hamburg and Havre both inclusive; 9d. per unit additional if ordered to the Continent; 9d. less if ordered to the Bristol Channel; and 1s. additional if ordered from Gibraltar to a Channel port of call.

"Northern range" refers to the Atlantic U.S. ports, as follows: New York, Philadelphia, Baltimore, Newport News, Norfolk.

In United States grain freights the small figures are per quarter. The "net" freight is per ton of 20 cwt. on the quantity of heavy grain carried, or on the guaranteed deadweight of the steamer. The net register basis provides for the payment on the net register tonnage of the vessel.

"b.d." (bar draft) implies that the vessel is chartered or berthed to load as much cargo inside the bar as she can safely cross the bar

out lightening (the balance of cargo being supplied at a given of freight at another port). In the Plate trade the expression "2s." or "less 3s." implies that the vessel gets full freight for mount of cargo she carries over the bar, and 2s. or 3s. reduction what is shipped at the lower ports.

ton from U.S. This is carried either on the n.r. basis [see]or on the lb. basis, the freight per latter being quoted in fraction (of a penny), thus Galveston to Liverpool 17/64ths (of a p), or so much per 100 lbs., namely, for instance, 30 cents per bs.

the U.S. grain freights, either on "berth terms" or on the C.f.o. the quotations, unless otherwise stipulated, are for heavy grain 0 lbs. per qr., and if for oats 320 lbs. per qr., while barley goes 0 lbs. per qr. From the Gulf ports tonnage is mostly fixed for on what is called the net form of open charter, which implies all expenses at loading and discharging ports incidental to the loading and discharging of the cargo are paid by charterers, so that owners only pay the working expenses of the boat, and what remission may be agreed upon.

"berth terms" in the United States trade means that the steamer be loaded as fast as she can take in as customary at port of loading, and to be discharged as fast as she can deliver at port of discharge. In the Black Sea trade (Odessa, Nicolaieff, etc.), the term means that the boat has to be supplied with cargo at the rate of many poods per weather working day, equalling about 350 poods per day, unless more is stipulated for by owners, say, 500 tons per day, and that, if not otherwise stipulated in the berth agreement, the time does not count until the boat is in berth—the discharge to be as fast as steamer can deliver (after 24 hours?). In the Danube trade the term means that after the steamer arrives at berth the cargo will be loaded at the rate of 400 to 500 tons per her working day as may be agreed; discharge as fast as steamer can deliver (after 24 hours' notice). In the Black Sea trade, etc., the words "berth terms" carry the following condition, that the merchants have the option of shipping 5 per cent. less than their engagements.

A. (York Antwerp rules)—is applicable to insurance in regard to damages. (See Appendix B.)
B. "San Lorenzo limit"—to load in the River Parana at a port not beyond San Lorenzo.

11s. and 10s. (for instance) from Alexandria means U.K. for orders 11s., 1s. reduction if ordered direct to discharging port.

F.f.b., free of freight brokerage (American charters).

G.F. refers to time-charters effected with the Government. All other charterers now have their own forms of charter, many of them being notoriously bad and full of traps from end to end.

f.t. refers to ore charters, and means "full terms," that is, with despatch-money both ends and numerous pickings for charterers; on homeward charters despatch-money is at the rate of 10s. per hour, and upon charters to the U.S. £15 per day.

c.i.f., cost (of cargo), insurance, and freight.

p.p. (picked ports) used to be such as Rotterdam, Amsterdam, London, Hull, Liverpool, Avonmouth, Glasgow, Newcastle, Cardiff, etc. Objectionable ports used to be such as Hamburg, Bremen, Nordenhamn, the French Atlantic ports, Londonderry, Limerick, King's Lynn, Ipswich, Llanelly, etc.

"Prompt" means that the steamer is within a week or so of the loading port. "Spot" signifies that the vessel is at the port of loading.

"Half-and-half" applies to bunkers shipped in Wales, and signifies that the coal is to be supplied in the proportions of half large and half small, but in actual experience this only works out about 30 to 40 per cent. large, remainder small. "Through coal" means the coal is supplied as it is worked, there being very little difference between this and half-and-half mixtures.

"Gulf port" means the Gulf of Mexico, Port Arthur or Galveston to Tampa inclusive.

U.K.H.A.D., United Kingdom, Havre, Antwerp, or Dunkirk.

"Dreading," option shipping general cargo, charterers paying all extra expenses over and above a cargo of grain, and freight to be equivalent to what it would be with a full cargo of grain.

"Baltcon."—Code name of the Baltic and White Sea Conference coal charter, 1908, from East Coast of England and Scotch ports to all ports in the Baltic, Scandinavia and White Sea.

"Merblanc."—Code name of White Sea wood charter to the United Kingdom, 1899.

"Pixpinus."—Code name of pitch-pine charter, 1906, for the United Kingdom, European Continent and Mediterranean.

"Centrocon."—Code name of River Plate charter-party, 1914, homewards.

"Timon."—Code name of time charter, 1902.

"Benacon."—Code name of British North American (Atlantic) wood charter-party, 1914.

C.t.l.—Constructive total loss.

F.i.a.—Full interest admitted.

F.a.a.—Free of all average.

F. and d.—Freight and demurrage.

F.a.—Free alongside.

F.c. and s.—Free of capture and seizure.

F.o.r.—Free on rail.

F.p.a.—Free of particular average.

G.a.—General average.

N.h.p.—Nominal horse-power.

O.r.—Owner's risk.

S.c.—Salvage charges.

T.l.—Total loss.

T.l.o.—Total loss only.

W.p.—Weather permitting.

Cotton charters.—In view of the fact that cotton, grain, lumber and coal represent the bulk of the commodities shipped in tramps from ports of this country, a few words should be said about the principal charter parties used in the important trades. The most significant cotton charter party is the Anglo-American, which, in its original form, was adopted by the Chamber of Shipping of the United Kingdom in 1895, but which has since then received numerous modifications. We go somewhat more fully into the details of this particular contract because it serves as a good illustration of the extent to which the peculiarities of the cargo and of the trade routes over which the cargo is to be shipped determine the character of the contract.

To begin with, it should be noted that great emphasis is laid upon the ship's ability to take water ballast sufficient to allow a full cargo of cotton to be loaded. As we have seen from our table of load factors, cotton is so light

that a full cargo of it will not weigh the ship down in the water far enough to insure stability, therefore, ballast has to be used to add to the weight. Another stipulation is founded upon the large size of the bale in which the cotton is shipped. Too many partitions interfere with economical loading; therefore, a paragraph of the cotton charter stipulates that certain movable partitions and other obstructions must be taken down at the ship's expense if the charterers demand it. Another paragraph reflects the effect of the route usually followed by cotton steamers from Gulf Ports to Europe. Moving northward along the Atlantic coast of the United States, they pass by the most important centres of the bunkering trade of this country, namely, Newport News and Lambert Point, near Norfolk. Since it is in the interest of the charterer that bunker coal encroach as little as possible upon the carrying capacity of the ship, he stipulates that a new coal supply is to be taken on at Newport News, or a neighboring port, sufficient to take the ship across to England or to the west coast of Europe. If the ship is to go further, either into the Baltic or the Mediterranean, coal is to be taken on at a European port. In this particular case, the shipowner is paid so much per net registered ton, regardless of the amount of cargo loaded. That means that the charterer has to pay "dead freight" for the unused carrying capacity.

The "Pixpinus."—The most common charter used in the lumber trade is the "Pixpinus" or Chamber of Shipping pitch pine charter, which takes its name from the telegraphic code word used to indicate it between ship brokers. Since its adoption in 1898, it has been in extensive use in Europe as well as on the Gulf coast of the United States. An interesting feature of this charter

is the fact that the number of "lay days" is determined by allowing 1.25 days for each hundred net registered tons of the vessel. Among timber and lumber charter is the European Charter Party (Sail \$2). As the name implies, this form is used for sailing vessels. The \$2 refers to the provision which requires the ship-owner to pay the charterer \$2 for each fifty cubic feet of cargo, in consideration that the shipper pay the expenses of storing as well as the port charges.

Grain charters.—The greatest variety of charter parties is probably to be found in the grain trade. The most important used in the grain export from the United States is the "Net Grain Charter Party." Contrary to the cotton charter which estimated the freight payments on the basis of a registered ton under this form the amount of cargo determines the freight payments. Another point of distinction is found in the paragraph which stipulates that the charterer pay the ship's expenses at both loading and discharging ports. Besides this form, other grain charter parties are frequently used; namely, the "Baltimore Berth Grain Charter Party," "Cork for Orders Charter Party," "Berth Terms Grain Charter Party" and the "Galveston Grain Charter Party." Of these the first two are most commonly used in the Baltimore trade, the third one in New Orleans, and the last in Galveston, as the name implies. Of these the "Cork for Orders Charter Party" is, for many reasons, the most interesting. The real title is: "Aproved Baltimore Grain Charter Party-Steamer-Range."

The meaning of "range."—The word "range" refers to the provisions in the charter by which the loading port is not specified at the time the charter is made. This provision requires the vessel to report at some specified place,

for instance, Delaware Breakwater, there to receive orders as to the leading port. In case the ship has a cargo to discharge in the United States before entering upon the service required by the charter, orders naming the loading port may be sent to the vessel at the last port of discharge.

In this charter, the loading ports are limited to the Atlantic coast within a certain range, and for this reason the word "range" appears as part of the printed title. This form provides also that the ship proceed from the loading port to Queenstown, Falmouth, or Plymouth, there to receive orders as to the final destination. Formerly, the agreement named Cork, as the port at which to receive orders, and the expression, "Cork for orders" continues to be used. In actual practice at the present time, the final destination of the vessel is usually determined before the cargo is loaded, so that the ship is ordered from the loading port direct to the port or ports of discharge.¹

Example of a grain charter.—A widely used grain charter party is here given:

NEW YORK PRODUCE EXCHANGE

APPROVED GRAIN CHARTER PARTY OF 1897.

AMENDED JANUARY 1, 1899.

New York.....19....

1. IT IS THIS DAY MUTUALLY AGREED, between.....
.....Agents for owners of the.....steamship.....
ofbuiltatof

¹ Frank Andrews, pp. *op. cit.* 26, 27.

net tons register, or thereabouts, and guaranteed.....

Qrs. 10 per cent, more or less capacity, classed.....

.....in.....now

.....and

That the said Steampship, being tight, staunch and strong, and in every way fitted for the voyage, with liberty to take outward cargo to.....for owners' benefit, shall, with all convenient speed, sail and proceed to.....

.....

or as near thereunto as she may safely get, and there load, always afloat, from said Charterers, or their Agents, a full and complete cargo, subject to limits above guaranteed of Wheat, Indian Corn and/or Rye not exceeding what she can reasonably stow and carry over and above her Cabin, Tackle, Apparel, Provisions, Fuel and Furniture. Orders as to loading port to be given within 24 hours after receipt of notice of arrival at port of call in the United States, if in ballast, or before 12 o'clock noon on the day of completion of discharge at a port in the United States, if with cargo, except on Saturdays, when orders shall be given before 11 o'clock A. M. If not discharged on the day on which demand for loading port is made, vessel to ask again for orders. Vessel to load under inspection of Underwriters' Agents, at her expense, and to comply with their rules. The cargo to be brought to and taken from alongside at Merchant's risk and expense, and being so loaded shall therewith proceed direct to Queenstown, Falmouth or Plymouth for orders (which must be given within twenty-four hours after Vessel's arrival at Port of Call, or lay days to count), to discharge at a safe port in the United Kingdom or on the Continent, between Bordeaux and Hamburg, both included, Rouen excluded, or direct to a Port within said limits, (Rouen being always excluded), as ordered on signing bills of lading.....

.....

or as near thereunto as she may safely get, and deliver the same, always afloat, on being paid freight, as follows:

If ordered from QUEENSTOWN, FALMOUTH, or PLYMOUTH to discharge in the UNITED KINGDOM.....shillings and.....pence ().

If ordered from QUEENSTOWN, FALMOUTH or PLYMOUTH to discharge on the CONTINENT, as above, 10 per cent additional on above named freight.

If ordered to a DIRECT PORT in the UNITED KINGDOM,.....
shillings and.....pence ().

If ordered to a DIRECT PORT on the CONTINENT, as above.....
shillings and.....pence. ().

.....
All in British Sterling, for each and every quarter of 480 pounds
English weight, delivered, in full of Port Charges and Pilotages,
to be paid on unloading and right delivery of the cargo, in cash,
if in the United Kingdom, and in cash at current rate of Ex-
change for Banker's Shortsight Bills on London, if on the Con-
tinent, always without discount or allowance.

2. It is also mutually agreed that the Carrier shall not be liable
for loss or damage occasioned by causes beyond his control, by
the perils of the seas or other waters, by fire from any cause, or
wheresoever occurring, by barratry of the master or crew, by
enemies, pirates, or robbers, by arrest and restraint of princes,
rulers or people, by explosion, bursting of boilers, breakage of
shafts or any latent defect in hull, machinery or appurtenances,
by collisions, stranding or other accidents of navigation of what-
soever kind, (even when occasioned by the negligence, default
or error in judgment of the pilot, master, mariners, or other
servants of the ship owner, not resulting, however, in any case,
from want of due diligence by the owners of the ship, or any of
them, or by the Ship's Husband or Manager), or unseaworthi-
ness of the ship, even existing at time of shipment or sailing on
the voyage, provided the owners have exercised due diligence to
make the vessel seaworthy.

3. It is also mutually agreed that this contract is subject to all
the terms and provisions of, and all the exemptions from liability
contained in the Act of Congress of the United States, approved
on the 13th day of February, 1893, and entitled "An Act Relat-
ing to Navigation of Vessels, etc."

4. Captain to call at Broker's office, as requested, and sign
Bills of Lading, to any rate of freight as presented, without pre-
judice to this Charter Party.

5. Freight, as per bills of Lading, to be taken without deduc-
tion in payment of this Charter, any deficiency to be paid at Port
of Loading, in cash, less insurance, on signing Bills of Lading,
and any surplus over and above estimated Charter to be settled
there before the vessel clears at the Custom House, by Captain's

**Charters favor, upon Consignee, payable five days after
it port of discharge.**

**Vessel to load and discharge at such wharf or in such dock
be named by Charterers or their agents, provided not
long with above terms, and no extra detention or expense
by incurred by Vessel Should Vessel have to haul for
more than once, Charterers to pay the expense of towage
of first move, and time so expended to count as lay days.
of Loading cargo to be delivered on board of Vessel by
or otherwise, Steamer paying usual trimming charges
if more than one kind of grain is shipped, any necessary
incurred for separations to be paid by Charterers.**

.....() running lay days, Sundays, and
holidays excepted (if the vessel be not sooner dispatched),
allowed for loading and discharging Vessel, and if longer
, Charterers to pay demurrage at the rate of.....
ence British Sterling, or its equivalent per net register
day, payable day by day, provided such detention shall
not default of said Charterers or their agents. Lighterage,
always at risk and expense of cargo.

days, if required by Charterers, not to commence be-
.....
Charterers or their agents shall have the option of cancel-
the Charter Party if the Vessel be not ready to receive
or before the..... Such readiness shall
the arrival of the vessel at the loading port, entry there-
Custom House, and all compartments ready to receive
shall be shown by the Master's written notification, ac-
ced by Underwriters' Surveyor's pass to that effect,
must be presented at the office of the Charterers, or
ents, at or before 4 P. M., or if on Saturday before 12
noon of said day. This option to cancel shall be exer-
t later than the presentation of the said Surveyor's pass
ness.

days for loading to commence at 7 A. M. on the day
Vessel is ready to receive cargo, provided vessel is at load-
as ordered, otherwise days to count in accordance with
s governing at port of loading, and provided Charterers
eived due notice, in writing, of readiness at their office,
nied by Surveyor's Certificate of such readiness not

later than 4 o'clock P. M., except on Saturdays, when notice of readiness and Surveyor's Certificate must be tendered at or before 12 o'clock noon.

11. Should the Steamer be ordered to discharge at a place to which there is not sufficient water for her to get the first tide after arrival without lightening, and lie aways afloat, lay days are to count from forty-eight hours after her arrival at safe anchorage, for similar vessels bound for such place, and any lighterage incurred to enable her to reach the place of discharge, is to be at the expense and risk of the receiver of cargo, any custom of the port or place to the contrary notwithstanding, but time occupied in proceeding from anchorage to the port of discharge is not to count. If the cargo cannot be discharged by reason of a strike or lockout of any class of workmen essential to the discharge of the cargo, the days for discharging shall not count during the continuance of such strike or lockout. A strike of the receiver's men only shall not exonerate him from demurrage for which he may be liable under this charter if by the use of reasonable diligence he could have obtained other suitable labor, and in case of any delay by reason of the before-mentioned causes, no claim for damages shall be made by the receivers of the cargo, the owners of the ship, or by any other party under this charter.

12. In the event of steamer being ordered to discharge in Scandinavia, Denmark, the Sound, Baltic or Gulf of Finland, and on arrival at destination be unable to enter port or discharging-berth on account of ice or frost, she shall have privilege of proceeding to nearest safe port or berth and there discharge; freight to be paid the same as if discharged at port or berth to which she was ordered, and steamer shall also have the further privilege, if ordered to a destination as provided for in this paragraph, of calling for coals in the United Kingdom.

13. In the event of steamer being ordered to discharge at a port beyond Gibraltar, she to have the privilege of coaling at Gibraltar.

14. Charterer's liability under this Charter to cease on cargo being shipped, but the Vessel to have a lien thereon for all freight, dead freight, demurrage and/or average. Steamer to have liberty to tow and be towed, and to assist Vessels in all

tuations. General average, if any, payable according to York-
ntwerp rules of 1890.

15. Cash for Vessel's ordinary disbursements at Port of Load-
ing to be advanced by Charterers, if required by master, at
current rate of exchange, subject to insurance and two and a
half per cent commission.

.....
.....
.....
.....
.....

16. A commission of five per cent, and the customary Freight
Brokerage is due by Vessel on signing of this Charter Party to
..... Vessel lost or not lost, whose Agents at Port of
loading are to attend to ship's business on customary terms.

7. This Charter Party is made subject to the rules of the New
York Produce Exchange, and all disputes arising at port of
loading shall be subject to arbitration at New York as therein
provided.

18. Penalty for non-performance of this agreement, estimated
amount of freight. Witness to the
signature of

.....

As Agents by authority of

..... Witness to the signature of

.....

..... HEREBY CERTIFY that the foregoing is a true and correct copy
the original Charter Party on file in office.

.....

Peculiarities of the fruit trade.—The West Indian fruit
trade, because of its nature, employs the time charter
party almost exclusively. A feature of the fruit charter
distinct from other forms, is the restriction "that on
account of the perishable nature of the cargoes that
is steamer is intended to carry, she is not allowed to
stop to pick up any wreck or in any way assist or tow

any vessel, especially when by so doing she is liable to be detained, only in order to save human life."¹

Unless it is prohibited by the terms of the charter party, the charterer may sublet a portion or the whole of the ship or he may transfer the charter to others. His freedom of action, however, in charging for the space so offered is limited so as to discourage this practice.

Papers used in the line business.—Shipments of less than cargo quantities are handled almost exclusively by liners. Because of the liner's legal status as common carrier and because of the complexities of the problem of handling thousands of shipments of various shapes, sizes, weights and values, the forwarding routine is much more complicated and the number of papers used considerably larger.

The papers which constitute the record of the dealings between the carrier and the shipper, the shipper and the Government authorities, the consignee and the insurance concern, are styled "Shipper's Papers," not to be confused with the "Ship's Papers," which represent the dealings of the carrier with the Government and the operation of the vessel.

These shipping documents may be further classified according to the authority requiring their execution. On this basis we may distinguish documents required by the carriers such as cargo contracts and booking records, dock receipts, tally sheets, dock sheets, bills of lading, parcel receipts, notice of arrival delivery order and delivery receipts. Government documents form the next group. They may be subdivided again according to whether the United States Government or a foreign government requires them and also according to whether the shipper or the carrier has to fill

¹ *Ibid.* p. 28.

them out. They are too numerous to be fully discussed in a general treatise on Ocean Shipping. They are carefully explained in Grover G. Huebner's *Ocean Steamship Traffic Management*. Additional data are found in *Paper Work in Export Trade (Document Technique)* by Snider, Maule and MacElwee, Department of Commerce, Bureau of Foreign and Domestic Commerce, Miscellaneous Series—No. 85. Finally there is a third set of papers which is characteristic to the forwarding business.

Packing and marking.—In order to make the following analysis of the shipper's papers as clear and concrete as possible, we begin with an illustration¹ showing one of the cases belonging to the particular shipment referred to in the following document.



It will be noticed that on the case are printed, among other things, the name of the shipper, consignee's shipping mark and the serial number of the case.

¹ This and the following cuts are taken from a pamphlet of the National Association of Manufacturers, who kindly have consented to their use.

OCEAN SHIPPING

The shipping permit.—When an agreement has been reached in regard to the ocean freight rates on the goods to be transported, either by the exporter himself or through a forwarding agent, a shipping permit is issued by the steamship company which is to carry the freight. The permit here reproduced instructs the clerk of a given steamer to receive from a named shipper on specified dates certain packages of cargo for shipment to a given port of destination. Many firms use more complicated permits, containing many more details and a full set of terms and conditions. Frequently this shipment is carefully described, weights and shipping marks being given.

SHIPPING PERMIT

Send Bills of Lading to our office immediately on receiving the receipt from dock.

No single package valued over
\$100 unless noted herein.

42 BROADWAY.

New York, April 2, 1917.

Clerk of Steamship Verdi

For Montevideo Please receive Twenty-two (22) cases

From Messrs. Hamm's Paint & Varnish Mfg. Co., New York.

Cargo for different ports to be kept separate on Lighters
No freight received after 5 P. M., or 12 o'clock noon on Saturday, unless special stipulation to that effect is made
on this permit.

April 7, 1917.

Steamer at Lampert & Holt Line
Pier 8, Robert Street, Brooklyn, N. Y.

And oblige,

LAMPERT & HOLT LTD.

[Signature]
per

Receiving Clerk will receive cargo.

Courtesy National Association of Manufacturers.

The Dock receipt.—The driver who takes the shipment to the dock is given the following dock receipt, signed by the receiving clerk of the steamship company:

DOCK RECEIPT

SURAL	LAMPORT & HOLT LINE			No. 246,485
	44 BROADWAY,			NEW YORK, APRIL 7, 1917
CARRIED ON BOARD THE BALASHY EXPRESS CO., BY JASPER PAINT & VARNISH MFG. CO., FOR THE SHIPPER, IN SHIPPED GRAN ULTRA AND QUALITY THE FOLLOWING QUANTITY OF COTTON AND COTTON, DRASTICALLY PAINTED, VARNISHED AND IMPROVED, WHICH IS SHIPPED AND NOT TO BE DEEMED PART OF QUANTITY OF GOODS HEREBY RECEIVED FOR PURCHASED SHIPPED OR AGAINST THE LAMPORT & HOLT LINE, OR IMPORTED Verdi				
Montevideo, for the port of destination, A copy of this receipt is held by the Lamport & Holt Line covering the right to ship such goods to ports or to parts of or near a port or subsequent country.				
Description of packages and quantity of each package, size, surface, color, dimensions, both of weight and dimensions of each part of the ship. The Lamport & Holt Line's regular rate of loading is to be used for all other packages than the head of cargo and shall be liable for loss of such goods on the same terms as shippers. The Lamport & Holt Line shall not become responsible for the goods if the goods are suffered damage while being loaded or during transportation by sea or by land or by air or by ordinary road from shippers up to the destination, excepting any liability of the shipper and when maintained in good repair and of loading such shippers are in form prepared for shipment and in general in fit the value of one of the goods above stated per package, a copy of foreign vessel damage claim by the holder of the goods for shipment and the value of the goods to be deducted on account of the cost and expenses herein before stated, the goods shall be deemed delivered subject to the risk of falling shortness of value and liability to the holder and not continuing liability for damage by weight or apparent damage will be noted on the bill of lading. Shortage of value and liability to the holder and not continuing liability for any loss or shortage of weight remaining afterwards.				
LAMPORT & HOLT LINE <i>K. H. F.</i> No. of all goods must be copied upon and pasted in letters of ink on the bill of lading. IT MUST NOT BE ATTACHED TO THE BILL OF LADING.				

SHIPPER'S AREA REQUIRED TO FILL OUT AS BELOW									
No. of Package	Length		Breadth		Depth		Solid Contents		Weight
	ft	in	ft	in	ft	in	ft	in	
1 - 4 each	1	7	1	7	9		1	11	110
5 - 10 "	1	7	1	7	9		1	11	113
11 - 18 "	1	4	1	3	8		1	1	59
19 - 22 "	1	7	1	2	10		1	6	58

tesy National Association of Manufacturers.

The bill of lading.—The dock receipt is afterwards exchanged for the steamship bill of lading which, as the final receipt and as the negotiable instrument, representing the title to the *shipment*, must be particularly well guarded.

OCEAN SHIPPING

BILL OF LADING

LAMPOON & HOLT LINE - RIVER PLATE BILL OF LADING
CONVERTED FROM OVERLINES

B/L No. 4,182

Port of Shipment NEW YORK

Steamer VardíBound For MontevideoShipper NAMUSA Paint & Varnish Mfg. Co.Consignee: Order of TO ORDER (or Assigned)Party who may presently or subsequently "Order"
Be entitled Federico Gómez & Cia., Sarandi 448.SHIPPER'S DESCRIPTION
The Company's responsibility for description being limited as hereinbefore provided

Marks	Numbers	Packets	Description	WEIGHTS IN LBS.		
				Gross	Net	Value
	1 - 4	4	Prepared paint	472	412	49.00
	5 - 7	3	Prepared paint	452	392	37.00
	8 - 10	3	Prepared paint	452	392	37.00
	11 - 18	8	Enamel	312	240	94.00
	19 - 22	4	Varnish	464	384	30.00

*NAMUSA PAINT AND VARNISH MFG. CO.
Mr. E. J. [unclear]
AGENT PARADEA*

TOTAL NUMBER } 22

IN TRANSIT TO _____
AT SHIP'S EXPENSE BUT SHIPPERS RISK.

Also I hereby acknowledge this Bill of Lading the Shipper, Consignee and
Company or the persons agree to bound by all its terms, conditions, exceptions
and reservations to the paper and no overpage, whether written, printed or
stamped, as fully as if signed to all of them.

In witness whereof, the Company by its
representatives has signed 3 Bills
of Lading (exclusive of copies) all of the same
tenor and date, one of which being accom-
panied the others to stand void.

Dated at New York April 7 1917

FOR LAMPOON & HOLT LINE,

SAMPLE

PREPAID S

40 | 80

It is necessary for the shipper to prepare from three to eight or even more copies of the bill of lading, the exact number depending on the number of copies required by the steamship company, the consul and the shipper, respectively. In the particular case illustrated by our facsimiles, the following rules apply: "For shipments to Uruguay, three copies must be certified by the consul, a charge of \$1.10 being made for this. These copies, already endorsed by the shipper, are then signed by the steamship company and thus made 'negotiable.' Possession of any one negotiable copy conveys ownership of goods. A total of eight copies have been prepared to be disposed of as follows: Three (negotiable) to bank entrusted with collection of draft, two to steamship company, one (Spanish) to Consul, one for shipper's files, and one may be sent to customer for latter's files."¹

"Straight" and "order" bills of lading.—Two kinds of bills of lading are distinguishable—the straight bill of lading, and the order bill of lading. The straight bill of lading is made out directly to the consignee and is used when the shipment is paid for in advance or when the goods are shipped on open account, or when the country of destination expressly forbids to ship "to order." The "to order" bill of lading is usually made out to the shipper; it is negotiable and transfers the title to the consignee by endorsement.²

Shipper's export declaration.—Besides one or more duplicate copies of the bill of lading, the steamship company requires a shipper's export declaration, as follows:

¹ (National Association of Manufacturers), "*An Export Order and Allied Topics*," p. 19.

² For a detailed discussion of the Steamship Bill of Lading, see Annin., *op. cit.*, Chapters XXIV and XXV, also G. G. Huebner, *Ocean Steamships Traffic Management*, Chap. VII.

OCEAN SHIPPING

U. S. TREASURY DEPARTMENT.
ST. LOUIS, Mo.

OPTIONAL—For United States Customs Use Only

SHIPPER'S EXPORT DECLARATION

OF MERCHANDISE SHIPPED TO FOREIGN COUNTRIES OR NONCONTIGUOUS TERRITORIES OF THE U.S.

~~Applications will not be granted until sufficient documentation has been filed with the Collector of Customs.~~

Manufactured & shipped by ... Hannan Paint & Varnish Mfg. Co., ...
(one of oldest.)

Address: No. 30 Street Church City New York State N. Y.

From New York To

For shipment on the British S.S. "Ward".
(Name of vessel. If vessel, give name, native port, and flag if known.)

This form may be delivered or
mailed to carrier or carrier's office.
Waybill or manifest No. _____ Date _____ Declaration C. I. No. _____
(May be filled in by carrier or carrier's office.)

I, the undersigned, solemnly and truly declare that the above statement is a complete, just, and true account of all merchandise shipped by the party named; on board the vessel, car, or vehicle; and to the place or country named above; and that the description and quantity of each article is truly stated, and that the values thereof are the actual costs or values at the time and place of shipment for exportation.

Answers and solutions to Section 2

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Mr. Hammes, Paint & Marnish Mfg. Co.

This oath to be taken before Notary, Notary of Superior, or other authorized to administer oaths. This declaration must be signed but each word not to exceed one transcription to Canada or Mexico by car, vehicle, or ferry; or on shipments by vessel to any country if total word count does not exceed four.

~~SAMPLE~~ 101

PREPARATION OF EXPORT DECLARATION—(Read Carefully.)

SHIPPER MUST PREPARE THIS EXPORT DECLARATION and subscribe to the oath before a customs officer, or other authorized officer. The declaration must be signed by the shipper, but the oath may be omitted on exportation by vessel if the total value of the items does not exceed \$100 and on shipments regardless of Canada or Mexico by car, vehicle, or ferry. If the declaration is executed by an agent for the shipper it must be in writing on this declaration or other document filed with the Collector. The values and names of items may be omitted from the duplicate, but must always appear on the original. The original is for the use of collectors and will be treated as confidential and information not disclosed without written authority of the shipper. Export statistics are compiled from these declarations and all data required on the prescribed form must be given.

DOMESTIC ARTICLES EXPORTED.—The value of all articles grown, produced, or manufactured in whole or in part in the United States must be stated in the column of "U. S. Products."

FOREIGN ARTICLES EXPORTED.—The value of articles of foreign origin shipped out of the United States in addition to those imported must be stated in the column of "Foreign Products." If foreign articles are subjected to manufacture or alteration in the United States they become United States products and must be reported as such. Imported raw sugar refined in the United States should be reported as a domestic product.

VALUE OF ARTICLES to be stated is the selling or invoice price or the actual cost or true market value at the time of shipment for exportation.

DESCRIPTION OF ARTICLES EXPORTED must be accurate and complete. General terms such as dry goods, eats, machinery, millinery, etc., will not be accepted. In the case of cheese the declaration must state whether filled or unfilled, oleomargarine whether colored or uncolored, butter whether pure, adulterated, or renovated.

KIND OF PACKAGES as boxes, barrels, etc., and the net weight exclusive of outer coverings, must be specified.

TOTAL QUANTITY of each article expressed in the usual measure of pounds, yards, gallons, etc., must be stated. Distilled spirits exported must be stated in gallons of 90 per cent alcoholic strength.

COUNTRY OF FINAL DESTINATION OF GOODS—that is, the country to which goods are sold—must be stated. Special care should be exercised to state the final destination of goods shipped through Canada to Europe, and of goods transshipped in the United Kingdom, the Netherlands, Germany and France en route to other countries.

INSPECTION CERTIFICATES.—Process butter or butter adulterated or renovated must be accompanied by certificate issued by the United States inspector of dairy products. Certificate of inspection must be presented to the Collector of Customs and meat food products exported when required by the regulations of the Department of Agriculture.

PORT SCHEDULE B may be obtained free of charge from the Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington, D. C., and will be of much assistance to exporters.

Shipper's manifest.—Clearance is not granted until this form has been properly filled out and sworn to before a customs officer, notary or other authorized officer. This paper is also known as the "Shipper's Manifest."

"The declaration is prepared in duplicate and after being sworn to, the original is retained by the Collector of Customs. The duplicate is then taken to the steamship company with the bills of lading, now ready for signature, and is later delivered to the Collector of Customs by the steamship company. Export statistics are compiled by the Government from these declarations and all data called for must be furnished. The name of the shipper and the value of the various items of the shipment may be omitted from the duplicate.

"These forms may be obtained from the Collector of Customs at a low charge. They may be printed by private parties providing they conform strictly to the official form."¹

Consular invoices and other documents.—Many countries require that additional documents accompany the shipment.

"**Consular Invoice.**—This document is required when exports are consigned to Central and South American countries, Cuba, Mexico, and Portugal. The various countries have different forms which may be obtained and sworn to at the Consulates, fees being charged for certification. The number of copies required varies from one to seven, the various countries' regulations in this respect differing. Particulars must be given of the shipment and its value, shipping charges, etc."

"**Certificate of Origin.**—By a number of foreign coun-

¹ National Association of Manufacturers, *An Export Order and Allied Topics*, pp. 16-17.

ies, among which are Argentina, France (in the case of most goods), Italy, Japan, Nicaragua, Paraguay, Spain, Turkey, and Uruguay, a certificate is required stating that the goods to be exported are products or manufactures of the United States. Where countries have two tariff schedules, this certificate is necessary to secure the minimum duties. Various fees are charged in connection with the execution of certificates of origin.

"Non-Dumping Certificate.—Some of the British colonies—Canada, South Africa, Australia, and New Zealand—require a certification by the shipper that there is no difference between his export prices and discounts and those granted on the same goods in the United States domestic markets; or he can give a list of his domestic and export prices and discounts. By these means the Colonies seek to prevent the flooding of their markets with foreign goods at sharply cut prices, or prices below the cost of output."¹

The exporters' invoice, the statement of charges and the memorandum note are also made out by the shipper but do not directly concern the steamship company. Instead, they form the basis of a transaction between shipper and consignee, or shipper and financing banker.

The insurance documents will be discussed in a separate chapter.

Ship's papers.—An entirely different set of papers is known as "the ship's papers." The most important of these are.²

Ship's manifest.—A list of all consigned cargo, the destination of each item, its quantity, weight, distinguishing-

¹ Guaranty Trust Company of New York, *Shipping's Share in Foreign Trade*, p. 19.

² *Shipping's Share in Foreign Trade*, op. cit., p. 22.

ing marks and numbers. Before the vessel clears or enters a port a copy of the manifest must be filed with the Collector of the Port. It is used in connection with the Shippers' manifests as the basis of the Government's foreign trade statistics and also as a check on import duties. It is also necessary to file a copy at the foreign port of clearance or entry and other copies are carried for use on the ship. For sample inward manifests see Appendix A.

Port Sanitary Statement.—This is issued by the port authorities, and certifies that no dangerous or contagious disease in an epidemic form exists in the port of sailing.

Shipping articles.—An agreement between captain and crew as to the conditions under which the voyage is undertaken. A certified copy must be obtained before the vessel can clear for a foreign port.

Crew list.—In addition to the shipping articles a list of the crew, giving the name, description, birthplace, and residence of each member, must be deposited with the Collector of the Port before sailing and a certified copy secured for use on the voyage.

Certificate of admeasurement.—Also known as Ship's Register. It gives a list of measurements of various parts of the vessel, by which the gross and net tonnage of the ship is arrived at.

Inspection certificate.—Issued by the Government Inspection Service, and certifies that the regulations concerning officers, crew, and equipment have been complied with.

Log-book.—A record of the ship's voyage, which must be kept by the master while the vessel is at sea.

Clearance certificate.—This having been secured, the vessel is free to leave for a foreign port.

The following is a list of additional documents that should be handed to the master on his departure.¹

Bills of lading (copies)

Freight list (copies)

Out-turn manifest (on which to note shortage, average, etc.)

Storage plan.

Letter of voyage instructions.

Forms of log extracts (deck and engine)

Forms for voyage reports.

¹ Annin, p. 169.

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CHAPTER XVI

PASSENGER SERVICE

Significance of liner tonnage.—In number and carrying capacity, passenger ships, that is, express steamers and combination liners, are far outnumbered by the cargo boat; but in many respects, the passenger ship plays a more important part than the freight vessel. Because of the exacting requirements of passenger travel, regarding speed, safety and comfort, the passenger ship represents the acme of marine construction. Success in the passenger business is largely a matter of notoriety. It is for that reason that the passenger boat is widely advertised and each newcomer in the field is heralded and discussed throughout the travelling world. Furthermore, national pride and rivalry developed types of passenger ships which, economically speaking, were to say the least, premature and could not have been afforded by private capital without both the moral and financial backing of the nation. Last but not least, the passenger liner, because of its speed and size, plays an important part, entirely foreign to the cargo vessel, as a naval auxiliary in times of war. To be sure, tramps and cargo liners likewise are an indispensable national asset in times of war, but they do not become a part of the fighting machine as do the fast liners.

History of ocean travel and emigration.—Passenger ships, especially those of the express steamer type, are a very recent development. One might almost say that ocean travel did not exist before the advent of the steamship. The sailing vessel was too irregular and its use entailed too many hardships to permit any but the most necessary travelling.

To understand the evolution of ocean travel we must divide passenger movement into classes.

To-day, that is in normal times, emigrants, going from overcrowded countries to underpopulated lands, represent the bulk of ocean travel. The remainder may be divided into tourists, who travel for pleasure, and those who cross the ocean for commercial, political, missionary, and other purposes. Of those the pleasure-seekers form the youngest branch, since the prerequisite of this kind of traffic is a highly developed type of passenger vessel. We might say that it is not more than fifty years old. Commercial travel, in the modern sense of the word, is not much older. In its early beginnings, international sea-borne trade was carried on by merchant mariners who accompanied their wares on their own ships. Not until the common carrier had replaced the private carrier, and not until means of communication had reached a fairly high degree of development, did an appreciably large number of salesmen cross the sea. Migration, on the other hand, can boast of a longer history, as is amply illustrated by the colonization of this country. But the Industrial Revolution caused, in the Old World, a rapid increase of the population and, in the New World rendered possible the opening up of the vast area of virgin soil, which before the coming of the railroads were practically deserted prairies. The Industrial Revolution has greatly stimulated immigration across the sea. So also this most important branch of ocean travel is a development of the nineteenth century and did not assume the enormous proportions of to-day until the century's very end. This is shown in the table on page 322.

AVERAGE ANNUAL IMMIGRATION INTO THE UNITED STATES FROM VARIOUS COUNTRIES DURING THE YEARS 1825-1914

(Based on figures published by the U. S. Immigration Bureau.)

Period*	Average Annual Immigration from										Percentage contributed by										
	Asia China	British Empire	Germany	France	Italy	Austria-Hungary	Spain	Balkans	Portugal, Turkey, and Portugal	U.S.	Canada	Other Europe	U.S.	Canada	Other Europe	U.S.	Canada	Other Europe	U.S.	Canada	Other Europe
(1) 1825-1914 (Decennial Periods).																					
1825-34	... 59,000	14,000	4,000	—	—	—	—	—	—	44	11	—	—	—	—	—	—	—	—	—	—
1835-44	71,000	41,000	19,000	—	—	—	—	—	—	48	27	—	—	—	—	—	—	—	—	—	—
1845-54	294,000	161,000	56,000	2,000	—	—	—	—	—	57	38	—	—	—	—	—	—	—	—	—	—
1855-64	180,000	79,000	49,000	3,000	1,000	—	—	—	—	58	33	2	—	—	—	—	—	—	—	—	—
1865-74	284,000	54,000	13,000	22,000	2,000	3,000	8,000	—	—	60	23	1	—	—	—	—	—	—	—	—	—
1875-84	286,000	103,000	43,000	13,000	17,000	10,000	—	—	—	58	38	12	2	4	—	—	—	—	—	—	—
1885-94	483,000	129,000	56,000	54,000	17,000	44,000	16,000	—	—	56	25	12	10	11	—	—	—	—	—	—	—
1895-1904	689,000	246,000	39,000	114,000	102,000	77,000	16,000	—	—	52	12	6	35	39	17	4	—	—	—	—	—
1905-14	4,412,000	14,000	34,000	41,000	120,000	235,000	176,000	67,000	—	50	1	4	32	32	32	32	32	32	32	32	32
(2) 1895-1914 (Decennial Periods).																					
1895-99	... 276,000	32,000	14,000	35,000	60,000	67,000	41,000	7,000	19	2	9	22	17	16	2	—	—	—	—	—	—
1900-04	661,000	69,000	31,000	64,000	165,000	167,000	113,000	37,000	9	6	4	36	36	36	36	36	36	36	36	36	36
1905-09	1,070,000	144,000	35,000	45,000	171,000	184,000	107,000	43,000	11	4	2	32	32	32	32	32	32	32	32	32	32
1910-14	1,025,000	49,000	38,000	56,000	721,000	296,000	211,000	69,000	9	3	3	21	21	21	21	21	21	21	21	21	21

The effect of the war on tonnage supply.—Special emphasis should be placed on the fact that, as facilities beget trade, they also stimulate travel. Thus, to-day, perhaps millions could cross the water if the necessary steerage capacity were available. But, at this moment, only 750,000 at best, could cross within a twelve-month's period by means of the available steerage capacity. When it is known that large masses of people are pressing against the gateways of overcrowded continents, tonnage tends to increase to take care of this potential human cargo. Such a situation has arisen today as a result of the Great War.

"Perhaps there was no class of ship which was as heavily hit by the submarine campaign of the Central Powers as the passenger liners with ample immigrant accommodations. The Hamburg-American Line and the North German-Lloyd

Steamship Company were prominent in the steerage traffic. As the result of the war, the German companies were driven from the seas and their vessels were distributed among the Allies. Thirty of the finest liners were acquired by the United States through seizure, while the choice of the ships, which were delivered to the Allied Transport Pool after the signing of the Armistice, went to the British. These ships are just being placed in commercial service again.

"Of the thirty former German passenger ships now flying the American flag only two—the *Callao* and the *Moccasin*,—are being operated on commercial routes.

"It will require an average of about five months to recondition and refit the former German ships after the army re-delivers them to the Shipping Board. The *Leviathan*, the largest ship afloat, will be idle for the period of at least a year. The restoration of the pre-war schedules is proceeding slowly.

The present construction program of leading companies.—"The British lines, plying from Europe to the United States, suffered heavy losses. The Cunard line, which seems to have been singled out by the submarines of Germany, is seeking to build up again its express services from the United Kingdom and the Mediterranean to American ports. In an effort to replace the liners which went to the bottom of the Atlantic and the Mediterranean, it has inaugurated a building program which includes the construction of twelve intermediate-sized passenger carriers. The *Scythia*, first of the post-war liners, has just been launched, but it will require at least six months more to fit her out and make her ready for service.

"The International Mercantile Marine Company has advised that it will rehabilitate its fleet by the building of 250,000 tons of new ships. The keel for a 33,000-ton vi

for the Red Star Line will be laid within the next few weeks, and it is anticipated that at least eight new liners, of intermediate type ranging around 20,000 tons, will be constructed. However, it will be the summer of 1921 before any of these new liners may be expected to assist in the movement of immigrants.

"The two largest Italian lines, Transatlantica Italiana and Navigazione Generale Italiana, have placed contracts for a total of ten passenger ships which will ply between the United States and Italy. Two of the liners which will fly the flag of the Navigazione, the *Duilio* and *Guilio Cesare*, have been launched, but it is not anticipated that they will be in operation before 1921.

"The Russian-American Line, one of the leading steamship companies before the Bolsheviks gained sway in Russia, has disappeared from the seas. The Greek Line, which formerly had a fleet of five passenger ships on the route from New York to Piraeus, resumed operations with two ships last fall, after a three-year suspension. The French Line did not feel the submarine campaign to any appreciable extent, in so far as the passenger vessels were concerned."¹

But when once put into service this new tonnage has to be used, and the necessity of keeping it lucratively employed sends hundreds of steamship agents scurrying over the lands with surplus populations to keep the stream of human cargo flowing. Often they are aided by government and private agents, representing the interests of the underpopulated countries which hunger for new labor.

Ocean passenger service originally a by-product of freight service.—Ocean passenger service originated as a by-product of freight service. It began in a modest way

¹From *The Annalist*—April 12, 1920, p. 500.





THE MODERN OCEAN LINER



Courtesy International Mercantile Marine Company

White Star Liner OLYMPIC

when a few passengers were accommodated in the aftercastle, or the poop, where the captain and the navigating officers had their quarters, the place of honor on the ship. Here they stayed even when steam power supplanted the force of the wind, but only as long as side-propeller wheels were used.

The introduction of the screw-propeller made this part of the ship the most uncomfortable, because of the noise and vibration. It was then that the cabin was moved towards the centre of the ship, immediately in front of the steam engine. Gradually, the accommodation for passengers encroached more and more upon the cargo-carrying capacity of the vessel. This evolution worked along two separate lines. In the first place, passenger cabins were built in the space where formerly cargo could have been carried, although this tendency was counteracted as much as possible by building deck superstructures, higher and higher with every successive type, until to-day a maximum number of ten decks has been reached. But the adaptation of the ship's construction to passenger service, which requires greater speed, meant an even more serious curtailment of the cargo-carrying capacity. Increased speed means more fuel; more fuel means more bunker space, which is available only at the expense of cargo space. But, beyond a certain point, increase of speed cannot, economically, be attained by the increased use of fuel; it necessitates a considerable reduction of the block coefficient of the hull. Thus, ships of 17 or 18 knots should hardly exceed 70 percent, and an increase of the speed over and above 23 knots means a further loss of from 10 to 13 percent, unless the economical side of speed production is to be disregarded.

Load-index affects profitability.—One of the most important considerations regarding the profitability of

installing passenger accommodations in freight vessels, has been the load index. As we have seen in Chapter II, the cargo movements from one country to another are often badly balanced. This is particularly true on the all-important North Atlantic route. The exports from North America to Europe by far exceed the imports from Europe, in point of weight and volume. Here steerage passengers offer to the trans-Atlantic steamship companies a welcome solution of a difficult problem. Human freight, going west, balances the excess cargo going east. It is a serious question whether, without these favorable circumstances, steerage capacity would have been offered in as large dimensions, or whether steerage rates would have been as low as they have been. The increase of income, due to the better utilization of tonnage space, thus achieved, could be used to defray the greater cost of higher speed and more slender build of the passenger steamers. Only on this basis could the combination vessel enter into competition against the tramp and cargo liner, which were operated on a much lower cost basis.

Evolution of the express steamer.—Parallel to this evolution of the combination steamer, grew up another type of passenger vessel, namely, the pure passenger express steamer. Its paying value is based upon the earnings from transporting the most exacting travelling public of the earth—American tourists—coupled with the income from enormously increased steerage capacity. Only a few vessels of this type can exist side-by-side and pay for their investment and operating cost.

The competition of this highest type in turn reacted upon the combination vessel, which had to increase its speed more and more if all cabin passengers were not to be lost to the express steamer. The result was that the speed of the combination liner gradually increased from 12 to 14 knots to 17

knots. The prevailing speed of express steamers from 21 to 23 knots, while only rare exceptions p a speed of from 24 to 25 knots.

Different policies pursued by different companies.—It is interesting to study how the different steamship companies have arrived at different conclusions in trying to solve the problem of the relative speed, size, passenger and cargo accommodations, cabin and steerage accommodations, etc. Starting ourselves with a rough characterization of the important steamship companies serving the North Atlantic route, one may say that the Cunard Line has emphasized speed; and the White Star Line comfort and luxury. In their latest bids for the leadership in North Atlantic travel, the Hamburg-American Line tried to combine speed of the Cunarder with the comfort and luxury of the White Star Line, without at the same time sacrificing the chance of earning a fair sum from the transportation of goods. The chart given on page 272 has given the cargo-carrying capacity of the *Bismarck* as 15,000 tons, the capacity of a very large freighter.

Different considerations determine the policy regarding passenger accommodation on different routes. Thus, the extravagant display of luxury which marks the latest efforts of the marine architect, created for the North Atlantic route, might prove a doubtful asset to a company catering to the Australian or South African traveling public. An interesting speculation whether, in the future, the South Atlantic route will hold first rank as regards luxury display. Reports are current that passenger ships are now being built between Pacific ports of the United States and Australia, whose luxury and comfort will outdo anything hitherto offered. Among the ships which the Hamburg-American Line had to surrender under the terms of the

Peace Treaty is the *Cape Polonio*, which was intended for the South American service, and which was the only ship providing a private toilet for each stateroom. On the other hand, some of the best, largest and most luxuriously equipped liners, formerly plying on the transatlantic route, have been lost as a result of the war, and a policy of retrenchment has, at least temporarily, succeeded pre-war orgies of extravagance.

"Safety first" is slogan.—While the outstanding consideration controlling the construction of cargo-carrying vessels is maximum economy, safety is the prime desideratum in the case of passenger ships, with speed and comfort—or luxury—as secondary factors. The main aim of safety devices is the prevention of disaster. In so far, however, as all human handiwork is imperfect, the possibility of disaster must be included in the calculation of the ship-builder, and devices must be installed which reduce to the minimum the consequences of a disaster, should such occur. Accordingly, safety devices fall into two groups. Among the preventive types, the submarine bell and wireless telegraphy, allowing constant conversation between steamers approaching each other in a fog, and permitting the transmission of warnings from ship to ship or from land to ship, have reduced the danger of collision to a minimum. In addition to this, ships are partitioned by water-tight bulk-heads into a large number of compartments, many of which may be flooded without completely depriving the vessel of its buoyancy. Some ships are even provided with a complete outer skin, so that each one is a ship within a ship. Double bottoms reduce the danger from grounding, and automatic sprinklers and the substitution of electricity for gas or oil reduce the danger from fire. So we may say that, all along the line, the greatest possible safety is being attained within the limits of the

economic possibilities, under prevailing conditions. The *Titanic* disaster has done much to direct the attention of the ship-owner and ship-builder to the best distribution and installation of life-boats, rafts, and improved davits and other devices designed for similar purposes. Indirectly, the greatest safety is achieved by scientifically devised ocean lanes, careful patrolling of the ocean, improved weather reports and better knowledge of currents, winds, etc.

Comfort of modern liners.—Although size is a powerful aid in the striving towards the achievement of greater safety, it is also the foundation of greater comfort. Samuel Cunard is recognized as the initiator of the ocean steamer mail and passenger service, but Thomas H. Ismay, of the White Star Line, commercialized comfort and luxury; it was on his boats that gas-lighting first replaced dingy oil lamps, that devices were installed for lowering and raising the propeller to avoid "racing," and that experiments were made with oscillating cabins, designed to overcome the justly dreaded *mal de mer*, the greatest discomfort of ocean travel for the majority of people. To-day a novel invention is being installed on some ships which is to reduce to a minimum vibrations from the engine as well as the pitching of the ship, due to the motion of the waves—the gyroscope. It is hard to draw the line between comfort and luxury, but those who have enjoyed a passage on ships like the *Olympic*, *Imperator*, or *Mauretania*, know that Roman baths, winter gardens, Ritz-Carlton restaurants, swimming-pools, gymnasiums, etc., combine to offer to the passenger a sum total of diversion and delight which, by far, excel the pleasure normally enjoyed on land, even by the most fortunate. This is also true of the culinary side of ocean travel. The following list of items which fill the larder of a modern ocean steamer at the time of departure, will prove this statement:

The floating town.—“Every time the Cunard flyers set out upon their journey, the chief steward stocks his cold storage rooms with the carcasses of 40 oxen, 60 lambs, 80 sheep, 130 pigs and 10 calves, to vanish in the forms of cuts from the joint, steaks, chops, cutlets, and what not. Game is represented by 2,000 fowls, 400 pigeons, 250 partridge, a similar number of grouse, 800 quail, 200 snipe, 100 brace of pheasants, 350 ducks, 150 turkeys, and 90 geese. Three turtles, each weighing 325 pounds, assist in the concoction of soup; while 3,500 pounds of ling, 12 boxes of herring, 60 boxes of kippers, 12 barrels of red herring, 36 boxes of bloater, 10 boxes of fresh herrings, 1,500 pounds of salmon, 4 boxes of haddock and 45 boxes of fresh fish, such as turbot, sole, plaice, halibut, etc., are stowed away to meet the enormous appetites of the passengers.”¹

With telephone service throughout the ship, such as many a community on land might envy, with elevators to connect the numerous decks, with brass bedsteads replacing the old-fashioned berths, with daily papers printed aboard, reporting the latest news received by wireless, the ocean traveler of to-day may at times forget that he is not on terra firma but, temporarily, a denizen of a floating city.

Naturally these advantages are available only for a chosen few who can afford the heavy expense of a first-class passage, which, on the best steamers, and for the best accommodations, costs as much as \$10,000 a voyage or more. The enormous difference between first-class and steerage accommodations is bridged by intermediary accommodations, known as second-class, and on some of the most recently built mammoth steamers, as third-class. Some recent liners have been equipped to carry third-class passengers exclusively.

¹ F. A. Talbot, “Steamship Conquest of the Sea,” pp. 114, 115.

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CHAPTER XVII

MAIL AND EXPRESS SERVICE

Prerequisites of mail and express service—Speed and regularity, qualities which mark the passenger liner, are likewise the prerequisites of the mail and express services. Of these, the mail service is by far the most important, both in volume and in the variety of functions performed. Throughout the civilized world the postal service has become a government function. The carrying of mail, therefore, is one of the services rendered by the steamship lines which brings them into working contact with the governments of countries making use of ocean steamships. In some cases, mail payments to steamship companies have served, and still serve, as veiled subsidies. This phase of the problem will be discussed in a later chapter.

Volume of mail traffic.—The volume of mail traffic is a general index of the standard of civilization reached or in other words, the volume of mail which enters and leaves a country is a measure of the extent to which that country's commercial and cultural affairs are linked up with the similar interests of the rest of the world. In as much as England, because of her insularity, is to a higher degree dependent on outside sources and foreign markets than probably any other country of the world, one might expect England to lead in the use of ordinary international mails. But, in point of population, England is considerably outclassed by the United States and Germany. It is, therefore, not surprising that during the last years before the war, Germany and the United

States alternated in the world's leadership as users of the ordinary international mails. In 1913, the last normal year before the world war dislocated international exchange, Germany received 406,387,250 ordinary letters, cards and small pieces, and dispatched 389,243,030; while the United States received 350,881,710, and dispatched 384,698,607. Great Britain's mail was 230,307,000 pieces in, and 326,024,300 pieces out. Naturally not all of the foreign mail of the United States and of Germany is overseas mail.

"Consignee's mail."—The bulk of foreign mail is carried by specially appointed mail steamers, the one exception being the so-called consignee's mail, or ship's letters, which may be carried by any steamer. This mail may consist only of such communications as relate to the shipments on a particular vessel. No postage stamps should be attached to the envelope, which should be prominently marked "consignee." The inclusion of any other matter may result in the rejection of the entire communication.¹ All other postal communications and shipments are under the agreement of the Universal Postal Union.

Principles governing classification of mail.—The classification of mail matter does not follow the same principles which govern the classification of freight. In classifying the latter, the main idea is to arrive at a system whereby the maximum traffic is accommodated at the maximum revenue. The aim of the government postal service is not profit, but the promotion of public intelligence and the convenience of business. Therefore, the postage charge for different services performed is not

¹ See *Exporter's Encyclopedia*, p. 173.

adjusted to the cost of its services, but calculated so as best to accomplish this aim.

Different methods of paying for ocean mail service.— Different methods prevail for paying steamship companies for the carrying of United States ocean mail.

- (1) By contract based upon the length of the route and speed of the vessel.
- (2) By payment based upon the amount of postage received by the United States from the mail carried.

The contract service is based upon the law of March 3, 1891; entitled AN ACT to provide for ocean mail service between the United States and foreign ports and to promote commerce. This Act is superseded by the Merchant Marine Act, 1920, section 24 (see Appendix and Chapter XXX). There have been no changes as yet under the Act of 1920 so that the Act of 1891 still governs. Under this Act the Postmaster General may, after inviting bids, enter into contracts for terms of from five to ten years with American citizens for carrying mails on American steamships between the United States and foreign countries, with the exception of Canada, the several services "to be equitably distributed among the Atlantic, Mexican Gulf, and Pacific ports." One of the aims of the legislators in passing the Act of 1891 was the promotion of the American merchant marine. The building of large passenger vessels in American yards was to be encouraged. A premium was put on speed and modern methods of construction. The Act therefore specifies four classes of contracts, which provide compensation which varies with the character of the construction, tonnage and speed of vessel, as follows:

Classes	Steamships			Maximum Compensation per Mile
	Construction	Minim-um Speed	Minimum Gross Tonnage	
Class I.....	Iron or Steel	Knots 20	Tons 8,000	4.00
Class II.....	Iron or Steel	16	5,000	2.00
Class III.....	Iron or Steel	14	2,500	1.00
Class IV.....	Iron, Steel or Wood	12	1,500	.66 $\frac{2}{3}$

All vessels except those of Class IV must be constructed under the supervision of the Naval authorities and must be built for use as auxiliary cruisers in time of war. Vessels of all classes must, moreover, be built in American yards. An exception was allowed in the case of the American Line, which secured a Class I contract for a service to England and which was granted, by act of May 10, 1892, American registry for two foreign-built vessels on condition that two others of equal size and speed should be built in American yards.

Not only must the ships be built in American yards and owned by American citizens, but they must be officered by Americans and manned by crews of whom Americans shall constitute at least one-fourth during the first two years, one-third during the next three years, and one-half during the remainder of the contract. It is interesting to note that the steamers operated under the mail subsidy act of 1891 are the only American vessels that are required to carry American crews.

Mail contracts under the law of 1891.—The table on page 336 shows the amounts actually expended annually for

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Year end- ing June 30	American Line, New York to South- ampton	Oceanic Steam- ship Co.			New York & Cuban Mail Steamship Co.		Red D Line		American Mail Steam- ship Co. Boston and Phila- delphia to Jamaica	
		San Francisco	San Francisco to Sydney, Australia	Tahiti	New York to Vera Cruz, Mexico	New York to Havana, Cuba	New York to Puerto Cabello, Vene- zuela	New York to Mara- caibo, Vene- zuela	New York to Jamaica	
1892	\$55,000	.....	.....	\$85,068	\$49,455	\$27,075	.....	.....	.....
1893	3188,720	56,000	.....	130,104	73,476	81,287	.....	.....	.....
1894	220,258	55,000	.....	130,104	73,476	79,090	.....	.....	.....
1895	512,028	56,000	.....	130,104	73,476	79,080	.....	.....	.....
1896	757,680	135,000	.....	130,104	73,476	79,090	.....	.....	.....
1897	580,800	136,000	.....	102,582	57,933	81,288	.....	.....	.....
1898	485,674	136,000	.....	87,570	59,346	63,224	.....	.....	.....
1899	647,278	136,000	.....	130,104	73,476	42,902	.....	.....	.....
1900	528,538	133,272	.....	127,602	73,476	54,192	.....	.....	.....
1901	662,184	283,203	.....	130,104	74,476	56,450	.....	.....	.....
1902	690,672	283,203	42,120	130,104	73,476	53,528	.....	.....	.....
1903	690,483	283,203	42,120	132,606	73,476	60,880	.....	.....	.....
1904	682,688	298,862	42,120	130,629	71,878	63,315	.....	.....	.....
1905	762,638	249,885	42,180	130,884	72,398	63,315	.....	.....	.....
1906	691,224	6133,272	25,308	130,884	71,032	44,143	.....	.....	.....
1907	737,016	.....	37,982	130,884	71,032	58,445	.....	.....	.....
1908	737,536	.....	42,180	130,884	71,032	42,993	.....	.....	.....
1909	676,480	.....	46,398	133,401	71,032	63,149	.....	.....	.....
1910	646,472	.....	42,180	130,884	71,032	44,143	.....	.....	.....
1911	570,672	.....	821,090	150,984	72,398	63,210	44,451	80,456	.....
1912	620,850	201,916	.....	124,288	223,222	62,972	43,300	62,263	.....
1913	673,998	201,916	.....	97,560	69,600	62,972	34,640	18,289	.....
1914	714,178	201,916	.....	65,394	65,394	45,082	.....	.....	.....

a Discontinued Mar. 1, 1907.

b Discontinued Jan. 1, 1912.

c Resumed July 1, 1912.

d Discontinued Oct. 1, 1912.

e Discontinued Oct. 28, 1912.

h contract mail service subsidized under the act of March 3, 1891, in the period from 1892 to 1915."¹

On March 3, 1917, a supplementary statute was inserted into this act which empowered the Postmaster General "to contract with American citizens for transporting mail between the United States and Great Britain in American-built vessels of not less than 35,000 tons gross, having a speed of not less than 30 knots per hour, at compensation not exceeding \$8 per mile for each outward voyage." The conditions of this new statute are so exacting that probably considerable time will elapse before ships will be capable of earning this compensation. As appears from the table given on page 336, the American Line was then by far the most important contract mail carrier, receiving more payment than all the remaining lines taken together. This has entirely changed. For in Fall of 1920 the mail contract with the American lapsed and was not renewed. The details of the story are rather interesting:

There is unfeigned disappointment in American shipping circles at the announcement that the American Line's contract for the carrying of the mails between the United States and Great Britain will not be renewed. The original contract had been in force twenty-five years, and the failure to renew it has unpleasantly emphasized our lack of fast vessels. The necessities of the mails demand that none but the fastest ships shall be used to carry them.

At \$4 a mile, the rate of the American Line's mail contract under the Act of 1891, there has latterly been a loss to the business. The mails have averaged about 2,500 sacks per steamer. On the basis of 80 cents a pound, the rate now being paid, the revenue to the steamship company would be

Grosvenor M. Jones, Government Aid to Merchant Shipping, p. 41.

from five to ten times as much as under the \$4-a-mile rate.¹

Basing payment on amount of postage.—The second method of paying steamship companies which carry ocean mail is based upon the amount of postage received. Among the steamship companies receiving payment under this arrangement, foreign companies have been very prominent, as is shown by the table on page 339, which gives the amounts received by the most important American non-contract and foreign lines, in the years 1911-1914:

The payments granted under the act of 1891 to contract steamers had been far in excess of the amount which the government would have had to pay on a non-contract, weight basis, although even the rate of 80 cents a pound for letters and postcards, and 8 cents a pound for other articles, received by non-contract steamers flying the American flag, is far in excess of Universal Postal Union rates, particularly when the present exchange rate is taken into consideration. In recent years the tendency on the part of the United States Post Office Department has been to divert as much mail as possible from non-contract lines and to make the fullest possible use of the service rendered by contract liners. This has resulted in considerable saving to the Post Office Department—as appears from the following statement made by the Second Assistant Postmaster General in his annual report for 1915:

Policies of the United States Post Office Department.—“The total cost of the contract service was \$1,096,209.93, which is \$90,709.11 less than the amount that would have been allowable at the present rates to the conveying steamers if they had not been under contract

¹ From *Nautical Gazette*, Oct. 23, 1920.

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Registry and Company	Service	1914	1913	1912	1911
UNITED STATES REGISTRY					
Pacific Mail Steamship Co.	San Francisco to China, Japan, and the Philippines	\$62,259	\$77,787	\$88,214	\$60,150
Great Northern Steamship Co	Seattle to Hong Kong, via Japan	8,870	8,638	7,565	9,644
Panama R. R. Steamship Co	New York to Panama	198,395	188,021	158,663	162,475
Clyde Steamship Co.	New York to Santo Domingo and Turks Island	23,957	19,954	16,871	11,750
FOREIGN REGISTRY					
North German Lloyd	New York to Bremen	363,790	320,877	317,099	325,990
Cunard Steamship Co.	New York to Liverpool	227,495	206,042	269,573	263,985
White Star Line	Do	204,725	219,237	221,853	186,771
Compagnie Generale Transatlantique	New York to Havre	152,758	167,023	141,417	96,181
Hamburg-American Line	New York to Hamburg	83,296	62,817	57,092	42,703
Do	New York to West Indies, etc	13,153	13,183	20,654	19,730
Toyo Kisen Kaisha	San Francisco to Hong Kong, via Japan	21,680	29,766	30,996	25,653
Nippon Yusen Kaisha	Seattle to Hong Kong, via Japan	15,520	18,673	12,868	16,081
Union Steamship Co. of New Zealand	San Francisco to Australasia	13,653	9,318	20,019	16,189
Blue Funnel Line	Seattle to Hong Kong, etc.	11,186	6,821	5,670	—
Osaka Shosen Kaisha	Tacoma to Hong Kong, via Japan	8,056	7,715	12,739	8,482
Lamport & Holt Line	New York to West Indies and So. Amer.	38,009	38,310	34,037	30,075
United Fruit Co.	New York to Central America	55,691	45,853	16,373	3,386
Do	Boston to Costa Rica, etc	2,629	3,990	3,085	2,007
Pacific Steam Navigation Co	New Orleans to Central America	42,840	36,844	31,835	23,344
	Panama to Colombia, Peru, etc	18,016	13,802	—	—

and had conveyed the same mails. In considering the cost of the contract service, it should be borne in mind, however, that during the year foreign closed mails, amounting to 135,093,083 grams (297,880 pounds) of letters and post cards, and 429,717,543 grams (947,527 pounds) of other articles, the conveyance of which in the ordinary course would have cost the department at the rate of four francs a kilo for letters and post cards and 50 centimes a kilo for other articles, a sum amounting to \$145,759.60, were dispatched by the contract steamers without additional cost to the department. The net result, therefore, is that the contract service cost \$236,468.71 less than if the conveying steamers had not been under contract but had been paid on the basis of the weights of the mails at the rates regularly allowed to steamers of United States registry not under contract. In considering this subject it should be borne in mind that the fiscal year of 1914 was the first in the more than twenty years of service under the act of 1891 that the cost of the contract service was less than the conveying steamers would have received on the weight basis for conveying the same amount of mail. The economy effected by utilizing the contract steamers to the fullest extent possible can be readily appreciated when it is understood that all mail not dispatched by the contract steamers must be dispatched by non-contract steamers, and its conveyance paid for on the weight basis, while the increasing weight of the mail dispatched by the contract steamers does not increase their pay, which is on the mileage basis."

Sea post-offices.—Additional expense is incurred by maintaining sea post-offices on a number of steamers which bring foreign mail to this country and which are

supposed to expedite the assorting of this mail prior to the arrival of the steamer. There is also the item of expense connected with the United States postal agencies at Shanghai and Vera Cruz. The maintenance of the International Postal Union at Berne, Switzerland, and a number of minor items help to swell this cost.

Steamship lines conveying United States mail.—The principal steamship lines which conveyed mails to Europe during the fiscal year of 1920 are the following: Holland America, French Line, Cunard Line, American Line, Red Star Line, White Star Line, Swedish-American, Norwegian-American, Kerr Steamship Co., Baltic-American, Scandinavian-American and Anchor Line; to the West Indies; Mexico and Central and South America, the following: New York and Porto Rico Steamship Co., Red D Line, New York and Cuba Mail Steamship Co., Royal Netherlands West India Mail Steamship Co., Panama Railroad Steamship Co., Clyde Line, Quebec Steamship Co., United Fruit Co., Bull Insular Line, The Munson Line, Pacific Steam Navigation Co., The Gray Steamship Co., The Lamport & Holt Steamship Co., Norton Steamship Co., The Booth Steamship Co., The Cuyamel Fruit Co., Bluefields Fruit & Steamship Co., Gulf Navigation Co., New Orleans & South American Steamship Co.; and the principal Steamship Lines conveying mails to the Orient were as follows: The Oceanic Steamship Co., The Union Steamship Co., China Mail Steamship Co., The Pacific Mail Steamship Co., The Toyo Kisen Kaisha, Osaka Shosen Kaisha, Admiral Line, Nippon Yusen Kaisha, Canadian Pacific Steamship Co., The Blue Funnel Line, and The Canadian-Australian Line.

In this connection, it may be well to add that during the fiscal year 1920, and for the first time in many years, the amount paid for the conveyance of United States mails to foreign countries by steamers of American registry exceeded

the amount paid steamers of foreign registry for the conveyance of such mails. Since June 30, 1920, there have been some additions to the lines of steamships available for the transportation of foreign mails such as the United States Mail Steamship Company, the United American Line and the Luckenbach Line from New York for Europe; and the North China Line from the Pacific Coast for the Orient, all of the steamers operated by these lines being under American registry.

International parcel post.—A phase of the foreign mail service which has only recently gained the significance which it deserves, is the international parcel post service. The transmission of first, second and third class matter serves foreign trade indirectly, while through the sending and carrying of parcels, the post-office becomes a direct agent in the exporting and importing of commodities.

Foreign countries have given this method of reaching foreign customers much closer attention than has the United States. France is generally regarded as the leading country conducting exportations to distant lands by post. It is estimated that during the years preceding the war, almost 1/10 of all French exports moved through this channel. Thus, in 1913, more than 113 million dollars worth of goods were distributed from France all around the world by parcel post; over seven million parcels carrying these goods. This predominance of France is largely explained by the peculiar character of French commerce which lends itself particularly well to mail order business methods. Her exports consist largely of articles of luxury distributed by the famous costumers, shoemakers, milliners, perfumers, jewellers and department stores of Paris.

England's excellent parcel post connections.—England also has attached great value to this method of distributing her wares to foreign markets. Her parcel post packages increased in number from 4,637,902 in 1913, valued at 45 million dollars, to 6,964,902 parcels with a valuation of 66 million dollars, in 1915. In 1916 it probably exceeded 90 million dollars. The extent of England's parcel post business is largely due to her wonderful connections throughout the world and to the low rate at which the service is performed. Especially impressive is England's colonial parcel post, which naturally operates under the most favorable circumstances. Rates are low, insurance is complete, a C.O.D. system prevails, and a great bulk of parcels gathered together in a special shipping office in London, assorted by established routes and packed into inexpensive hampers, boxes, and crates, appears to be a commerce by itself.¹

This country has been somewhat slow in realizing the value of this foreign merchandizing method. This is due partly to the nature of our foreign trade, partly to the competition of private express companies. Indeed, it was through the American Express Company that foreign countries distributed their parcel post in the United States before our own parcel post system was sufficiently developed. Vice versa, at least one American mail order house of international fame utilized the superior parcel post connections of England by sending consolidated shipments of parcels by freight or express to Liverpool. The method was described before the Third National Foreign Trade Convention by the export manager of the firm, as follows:

¹ *The Americas*, December, 1916, pp. 1-5.

American mail order houses handicapped.—“By reason of the volume of our business, we have been able to perfect an arrangement whereby we forward to Liverpool three times a week, a bale of packages already wrapped and addressed to places with which the United States has no parcel post. At Liverpool the bale is opened and the parcels deposited in the British post by our agent. This arrangement gives us an advantage over casual shippers, who must rely upon the high charges and unsatisfactory services of the forwarding concerns.”¹ Special arrangements are now made to facilitate onward transmission from England and France.²

The same authority stated that in 1919, the United States had parcel post connections with 74 countries, as against 195 countries and colonies enumerated in the British postal guide.³ The importance of parcel post connections appears from the table on page 345, which shows the comparative cost of sending packages of 3, 7, and 11 pounds by express and first class mail from Chicago, and by parcel post from London to seven selected cities.

¹ Report on Third National Foreign Trade Convention, p. 317.

² See Supplement to Postal Bulletin No. 12156.

³ Since the arrangements have been made with Roumania and Lithuania, the weight limit in the case of these two countries being twenty-two pounds, and to Spain (including the Balcaric Islands, the Canary Islands, and the Spanish possessions in Northern Africa), British East Africa and Uganda, Trentino and Trieste, Belgian Congo, Bismark Archipelago, Gilbert and Ellice Islands, Nauru Island and Solomon Islands, Portuguese East Africa, Northern Rhodesia, Southern Rhodesia, the Southwest Africa Protectorate and Czecho Slovakia, Bulgaria and Poland, the weight limit in each case being eleven pounds; the weight limit of parcels for Argentina, Costa Rica and Paraguay has been increased to twenty-two pounds, the weight limit of packages to Panama has been increased to fifty pounds, and parcel-post service has been resumed to Austria and Germany, the limit of weight being eleven pounds.

(From letter of Second Assistant Postmaster General, April 23, 1920, to the Author.)

**COMPARATIVE TRANSPORTATION CHARGES FROM
UNITED STATES AND ENGLAND TO REPRE-
SENTATIVE FOREIGN PORTS¹**

	Charge for 3 Lbs. From Chicago		From London Parcel Post
	Express	1st Class Mail	
To—			
Madrid.....	\$4.33	\$1.56	\$0.36
Calcutta.....	2.12	1.56	.24
Singapore.....	2.32	1.56	.24
Suva.....	13.57	1.56	.40
Durban.....	4.33	1.56	.84
Lagos.....	15.40	1.56	.36
Johannesburg.....	*15.40	1.56	.84

	Charge for 7 Lbs. From Chicago		From London Parcel Post
	Express	1st Class Mail	
To—			
Madrid.....	\$6.94	\$3.48	\$0.44
Calcutta.....	3.46	3.48	.48
Singapore.....	3.46	3.48	.48
Suva.....	13.97	3.48	.80
Durban.....	6.94	3.48	1.20
Lagos.....	15.50	3.48	.60
Johannesburg.....	*15.50	3.48	1.20

	Charge for 11 Lbs. From Chicago		From London Parcel Post
	Express	1st Class Mail	
To—			
Madrid.....	\$8.54	\$5.40	\$0.52
Calcutta.....	4.88	5.40	.72
Singapore.....	4.88	5.40	.72
Suva.....	14.38	5.40	1.20
Durban.....	8.54	5.40	1.80
Lagos.....	15.60	5.40	.84
Johannesburg.....	*15.60	5.40	1.80

*Express to Cape Town only.

¹ Sixth National Foreign Trade Convention Report, p. 439.

Apart from the fact that the parcel post connections of this country are inadequate, the principle governing the operation of the parcel post is frequently criticized.

Deficiencies of American system.—In the first place, fault is found with the uniform rate charge of 12 cents per pound, applying to packages of from 1 to 20 pounds. The English system is considered by experts to be superior because it allows for a more minutely devised decreasing scale. Furthermore, our parcel post service is bare of certain important features which are necessary to a fully successful operation. The American exporter cannot insure his parcels and cannot send them C.O.D. In both these cases he is handicapped when compared with his European competitors. One of the important items which render parcel post shipments so attractive to exporters is the general freedom from the requirements of officially viséd consular documents, the cost of which would be prohibitive to the sending of many small packages. In many respects the parcel post is also preferable to shipping packages on "parcel receipts." This method is used when the minimum bill of lading offered by steamship companies is too high to warrant the shipment. Under the "parcel receipt" the responsibility of the steamship company is much less than under a bill of lading. Its use is primarily designed by the steamship company to enable the export shipper to get his samples to prospective buyers abroad at a small cost. The use of "parcel receipts" is limited to small packages of little value and is not universal among steamship companies.¹

Growth of American parcel post shipments abroad.—In spite of the limitations which as yet mark the Ameri-

¹ It is to be admitted that the American parcel post service is rapidly being improved.

can foreign parcel post service, it is enjoying increasing popularity as the following figures prove:

WEIGHT OF PARCEL POST PACKAGES DISPATCHED TO FOREIGN COUNTRIES, IN THE YEARS ENDED JUNE 30, 1918 AND 1919, WITH PERCENTAGES OF INCREASE OR DECREASE AS COMPARED WITH THE PRECEDING YEAR, BY COUNTRIES¹

Country.	Dispatched.			
	Weight.		Increase (+) or decrease (-).	
	1918 Pounds.	1919 Pounds.	1918 Per cent.	1919 Per cent.
Africa ¹.....	.....	9,937	.....	.....
Argentina.....	124,729	249,727	+ 10.29	+ 100.27
Australia.....	549,511	1,218,787	+ 97.46	+ 121.79
Bahamas.....	21,818	14,689	- 22.46	- 32.63
Barbados.....	52,590	61,246	- 19.41	+ 16.46
Belgium ².....	.....	175,100	.....	.....
Bermuda.....	26,338	49,866	- 29.46	+ 89.33
Bolivia.....	178,979	287,917	+ 12.45	+ 60.87
Brazil.....	239,905	330,318	+ 73.60	+ 37.69
British Guiana.....	30,250	37,252	+ 32.38	+ 23.15
British Honduras.....	22,433	23,838	+ 8.64	+ 6.26
Chile ³	242,360	20,507	- 25.78	- 91.53
China.....	178,503	220,155	- 41.05	+ 23.33
Colombia.....	633,721	650,027	- 16.24	+ 2.57
Costa Rica.....	74,070	88,182	- 46.55	+ 19.05
Curaçao.....	29,323	27,019	+ 6.38	- 7.86
Denmark ⁴.....	.....	11,677	.....	.....
Dominican Republic.....	118,059	147,364	+ 13.34	+ 24.82
Dutch Guiana.....	4,122	7,253	- 26.73	+ 75.95
Ecuador.....	243,941	252,953	- 4.76	+ 3.60
France.....	1,099,765	1,025,942	+244.30	- 6.71
French colonies.....	15,837	28,165	+128.10	+ 77.84
Gibraltar.....	6,401	21,288	+218.77	+232.57
Great Britain ⁵	4,128,638	4,159,288	+117.46	+ .74
Greece ⁶.....	.....	28,656	.....	.....
Guatemala.....	187,078	263,519	- 12.40	+ 40.86
Haiti.....	34,677	46,067	+ 5.37	+ 32.85
Honduras.....	176,932	201,420	+ 16.02	+ 13.84
Hongkong.....	46,453	97,303	+ 60.69	+109.47
Iceland ⁷.....	.....	517	.....	.....
Italy.....	1,320,168	1,116,219	+160.91	- 15.45
Jamaica.....	112,720	109,899	+ 6.52	- 2.50
Japan.....	595,045	1,099,071	+ 61.50	+ 84.70
Leeward Islands.....	36,168	38,860	- 1.13	+ 7.44
Liberia.....	2,772	1,215	- 9.97	- 56.17
Luxemburg ⁸.....	.....	250	.....	.....
Mexico.....	1,950,707	2,980,790	+131.82	+ 52.80
Netherlands ⁹.....	.....	2,105	.....	.....
Netherlands colonies ¹⁰	14,233	43,571	.....	+206.13
Newfoundland.....	28,947	28,652	- 33.06	- 1.02
New Zealand.....	262,711	493,827	+ 70.48	+ 87.97
Nicaragua.....	90,074	101,014	- 12.91	+ 12.15
Norway ¹⁰.....	.....	15,513	.....	.....

¹ From Statistical Abstract of the United States, 1919, p. 315.

Table continued on p. 348

WEIGHT OF PARCEL POST PACKAGES DISPATCHED TO FOREIGN COUNTRIES, IN THE YEARS ENDED JUNE 30, 1918 AND 1919, WITH PERCENTAGES OF INCREASE OR DECREASE AS COMPARED WITH THE PRECEDING YEAR, BY COUNTRIES

(Continued from p. 347)

Country.	Dispatched.			
	Weight.		Increase (+) or decrease (-).	
	1918	1919	1918	1919
Panama.....	Pounds. 94,841	Pounds. 107,903	Per cent. + 9.10	Per cent. + 13.77
Paraguay ¹¹.....	.....	361	.....	.....
Peru.....	495,030	677,977	+ 45.74	+ 36.96
Portugal ¹²	7,913	54,103	.....	+ 583.73
Salvador.....	99,771	129,776	- 2.99	+ 30.07
Sweden ¹³.....	.....	30,724	.....	.....
Trinidad.....	38,010	44,178	+ 4.86	+ 16.23
Society Islands.....	.....	1,519	.....	.....
Uruguay.....	45,625	86,685	+ 29.74	+ 89.99
Venezuela.....	163,845	164,938	- 1.47	+ .67
Windward Islands.....	15,225	16,992	+ 3.63	+ 11.60
Total.....	13,840,266	17,102,131	.....	.....

¹Service commencing Aug. 12, 1919.

²Service resumed Jan. 27, 1919.

³Service suspended Jan. 1, 1918, and resumed May 14, 1919.

⁴Service resumed May 7, 1919.

⁵Including Samoa.

⁶Service resumed Feb. 3, 1919.

⁷Service commencing Mar. 1, 1919.

⁸Service commencing April 23, 1919.

⁹New service.

¹⁰Service resumed Apr. 19, 1919.

¹¹Service commencing Apr. 30, 1919.

¹²Service commencing Oct. 10, 1917.

"Notwithstanding the interruptions to the international parcel post service due to the war, the weight of the parcel post mails dispatched during the years 1918-1919 was 17,102,131 pounds, or an increase of 23.57 per cent. over the previous year; of which 7,218,186 pounds represent the weight of the parcel mails dispatched to Mexico, Central and South America, an increase of 1,112,234 pounds, or 18.22 per cent. over the parcel mails dispatched to said countries during the preceding year."¹

¹ Annual Report of Postmaster General for year ending June 30, 1919.

International express business.—Much of this increase in the parcel post business has been at the expense of the express service, which is performed by rival express companies. In view of the fact that different advantages attach to the two methods of shipping packages, a certain division of labor is taking place.

The international express business began in 1840, when Harnen & Company, the firm which later developed into the Adams Express Company, established its agencies in the leading cities of Great Britain, France and Germany. From the start other questions besides the handling of packages stood in the foreground. When Harnen & Company gave up the express business proper, other American express companies had their turn, until only four companies remained in the field, namely: the American, the United States, the Wells-Fargo and the Adams. In 1914 the United States Express Company ceased to exist and when during the war the domestic express was merged into "The American Railway Express Company," the American Express Company continued alone in the foreign field and the express business proper of even that concern is referred to as "negligible" by their foreign trade manager: "The major business in foreign countries is financial in character, including operation in foreign exchange and particularly the financing in all fashions of export and import shipments, as well as the primary activity of travel financing through traveler's checks and letters of credit."¹

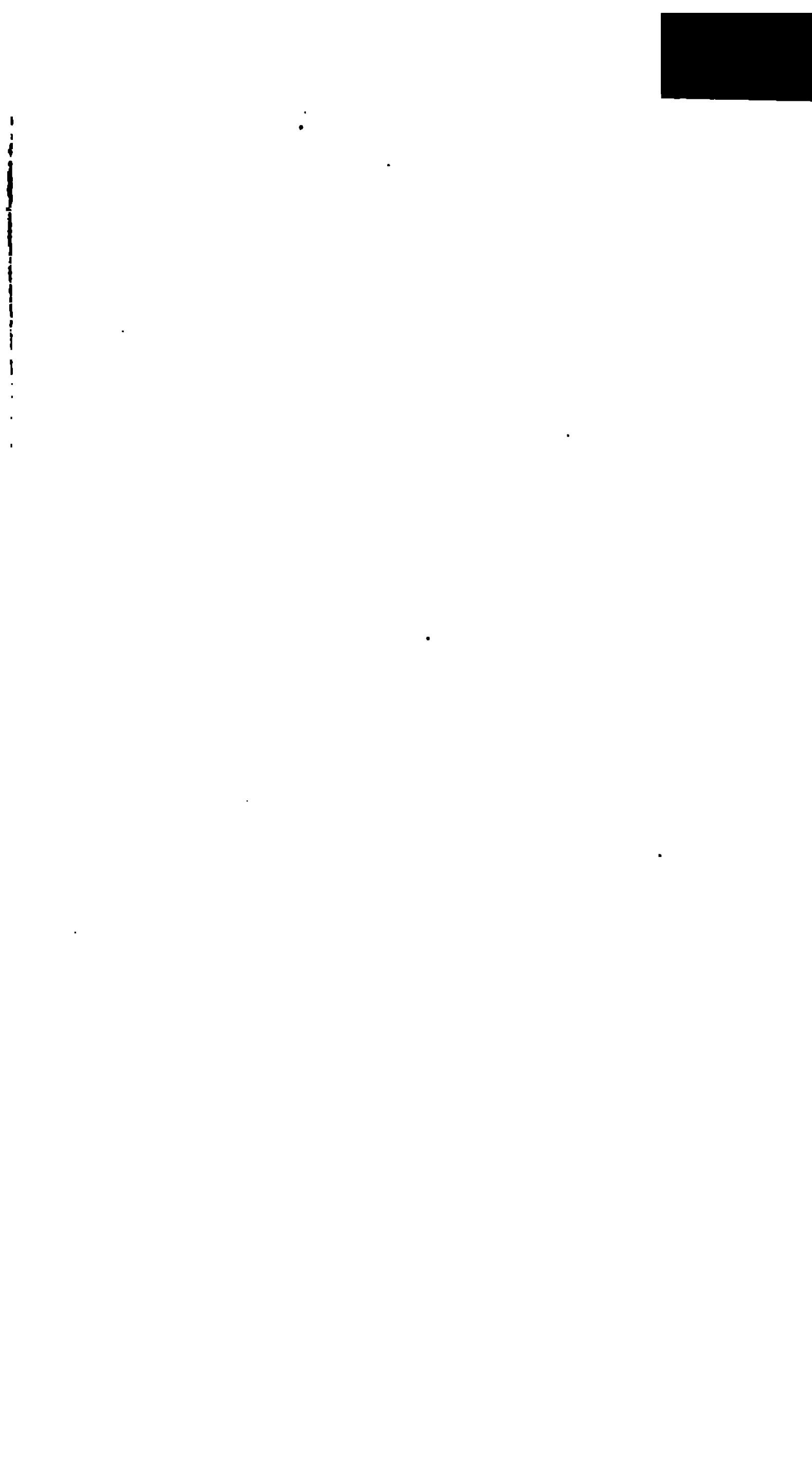
But the international express service is not confined to the companies supporting this work in the domestic field. Large and well-ordered express and freight forwarding concerns are located in our seaport cities.

¹ Quoted from letter to the author.

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PART VI
MARINE INSURANCE



CHAPTER XVIII

CLASSIFICATION AND REGISTRY OF SHIPPING

Ship classification the basis of hull insurance.—Modern marine transportation and international trade would be utterly unthinkable without marine insurance, that is, roughly speaking, insurance of both the ship and the cargo against the manifold perils of the sea. This insurance, in turn, would be a most cumbersome undertaking without the preliminary work of our great classification societies. While ships were small in size, simple in construction and equipped with but the most necessary apparatus and rigging, the business of estimating the risk was a relatively simple one. It grew in complexity and in volume with the development of shipping following the great discoveries. It was during that period that the early beginnings of ship classification and registry are to be found.

Beginning of Lloyd's.—The early history is identified with the name "Lloyd," which to this day has remained the best known in the marine insurance and ship classification world, although the former position of monopolistic control has had to or will soon have to give way under the pressure of competition, to one where Lloyd's may be considered as *primus inter pares*.

It is one of the romances of history that Edward Lloyd, the humble owner of a London coffee house, should perpetuate his name through two powerful organizations known throughout the world. The practice of merchants, ship-owners and underwriters meeting in coffee houses in an informal way had originated in Constantinople and had

spread throughout the trading centres of the continent, finally leaping across the channel. The shrewd proprietor of the coffee house knew well that it was not only the coffee which attracted his guests but rather the opportunity of obtaining marine intelligence. So he decided to furnish this also. At first this information took the form of handwritten notices regarding the movements of ships and particulars as to their build and equipment. By 1696, it had developed into the *Lloyd's News*, which appeared three times a week, was suspended for a while, and reappeared in 1726 under name of *Lloyd's List*. This *Lloyd's List*, for the first time, offered in printed form quite complete information regarding the classification of ships, on the basis of hull construction, condition of the hull, condition of equipment, etc. The information was given out for the exclusive use of subscribers. In the oldest copies known, those of 1764, 1765 and 1766, we find thirteen columns in which, with the use of characters for the hull and numerals for the equipment, a very satisfactory idea of the vessel and its condition is conveyed. While to-day the certificate of classification serves many interests—it is the builder's receipt, the owner's guarantee, the underwriter's authority and the shipper's business guide—during the seventeenth and eighteenth centuries the classification served almost exclusively the interest of the marine underwriters. Incidentally the information also became valuable to ship purchasers in cases where the ship happened to be in a distant port and could not be inspected by the buyer.

Shipbuilders abuse classification records.—However, towards the end of the eighteenth century, the shipbuilders took an intense interest in "*Lloyd's List*," much to the detriment of that publication. Under the pressure brought to bear by the shipbuilders of the Thames, the former impar-

method of ship classification was supplanted by one arbitrarily based on the locality where the ship was constructed. Ships built in a Thames yard were given deserved preference over those turned out in other shipbuilding centres of the United Kingdom. This injustice caused the injured parties to take measures of self-defense. In 1799, shipowners issued the "*Red Book*"—the exacte of which was "*The New Register Book of Shipping*"—compete with Lloyd's "*Green Book*." These two rival publications existed side by side until 1834, in which year they were amalgamated and a new committee of twenty-four members was entrusted with the management, containing in equal shares of merchants, shipowners and underwriters. A paragraph was expressly inserted into the by-laws which pledged the new organization to base the classification of ships only upon their real and intrinsic qualities as laid by a committee on the basis of reports of the surveyors. This did away once for all with the arbitrary decisions of individual surveyors and put an end to the unjust system of classifying ship classification on the locality of shipbuilding.

In 1870 the present system of classification was adopted and assigned as the highest classification mark, 100A.1, referring to the hull, the 1 to the equipment and the A.1 serving as a basis of comparison in judging the condition of hull and equipment at a given moment.

Plimsoll's load-line agitation creates a rival.—An important event in the history of Lloyd's is connected with the load-line agitation which began in the '70s. At that time Samuel Plimsoll started a crusade against what he called "offin ships"—ships overloaded and over insured, the latter of which meant more to their owners than their tonnage.

One of the report submitted in 1874 by a Royal Commission

mission under the pressure of public opinion, the Board of Trade required that on each ship should be clearly marked the line up to which the vessel might be safely loaded. This load-line is known as the "Plimsoll Line." Lloyd's began to issue reserve buoyancy and free board tables which became very valuable in determining the load-line; but when, in 1890, the Merchant Shipping Act was about to confer upon Lloyd's the monopoly of load-line fixing, the ship-builders of the Clyde started an agitation which resulted in that year in the creation of the British Corporation for the Survey and Registry of Shipping. This corporation was then given joint authority with Lloyd's to perform this important duty. Lloyd's, realizing the feeling rampant in the outlying shipping districts, wisely warded off trouble by a far-reaching reorganization which found its expression in the formation of the Committee of Seventy-two—at present entrusted with the management. This committee is composed of twenty-six members elected by the maritime interests of London, ten by Liverpool, eight by Glasgow, eighteen by other ports, and eleven by shipbuilding, marine engineering and structural steel manufacturing interests.

The process of ship classification.—The process followed in according a vessel classification and registration is described by Prof. A. W. Kirkaldy as follows:

"The general process by which classification and registration are accorded to a given vessel is that in the first instance, when the builder's plans have been drawn, they are submitted to the headquarters of the Registry. If the plans are found satisfactory they are passed and the work of construction can proceed forthwith.

"Sometimes, however, modifications are suggested, or explanations are required as to certain points, and some amount of negotiations may be necessary before the plans

receive official sanction. The steel of which the ship and boilers are to be constructed is manufactured under survey, and must pass the tests prescribed in the regulations. Fittings, including forgings for various purposes, the anchors, cables, etc., must all be manufactured according to rule and under the inspection of the official surveyors. These officers are found not only at the steel works and forging establishments of the United Kingdom, but also on the continent and in America. The completed vessel is therefore built and equipped under the direct control of the Registry, which assigns a class according to the standard of construction. But the work of the Registry is not only concerned with the construction of a vessel, but with her upkeep throughout her career, or at least throughout the period she remains on the Register. Thus there are periodical surveys. There are three special surveys during the first twelve years of a ship's life, one every four years, and each more exacting than the last. These special surveys are technically known as numbers 1, 2 and 3. Moreover, should a ship sustain an accident, or require repairs during these periods, the work must be carried out according to the requirements of the official surveyors. A steamer's boilers are under even more complete supervision, if that be possible. All marine boilers, after being at work six years, must be surveyed at least once a year. For a ship to hold a high class on a recognized Register is thus a proof of her seaworthiness, and affords to shippers and underwriters alike a guarantee without which it would be difficult indeed to carry on business."¹

The annual report of Lloyd's Register.—The annual report of *Lloyd's Register* is always a source of valuable information, but the first report to appear after the close of the war possessed even more than the usual value. It covers

¹ Kirkaldy, *British Shipping*, pp. 238-239.

not only the operations of the Society during the year 1918-1919, July to June, but it presents a general survey of the work carried on during the war. It reveals the enormous expansion of shipbuilding throughout the world and shows that on the whole, the oldest classification society has lived up to its reputation. At the end of June, 1919, 4,766,623 tons were being built under the inspection of the Society. Of these, 2,033,319 tons were built in the United Kingdom. The staff had to be considerably enlarged, particularly in the United States, for two reasons. In the first place, the shipbuilding capacity of this country was increased from an average pre-war rate of 200,000 gross tons a year, to 3,500,000 gross tons. Secondly, the officials of Lloyd's were entrusted with the inspection and testing of war material which was being produced in this country for the account of the British Government. It meant that the number of the Society's surveyors in America had to be increased from 22 before the war to 124 in 1918. Besides this, a special American Committee of the Register was established in New York.

The introduction to the first volume of the report tells, in a concise form, of the numerous and far-reaching changes which have taken place during the war, such as the production of fabricated ships; the building of concrete, cast-iron and composite ships, the rapid development of the motor ship, improvement of the turbine, the increasing use of oil as fuel for steamers, etc. The bulk of the first volume contains, in English as well as in French, the classification of all the new as well as the old ships recorded in the Register. The second volume is a compilation of statistical data, invaluable both to the practical shipping man and to the student of shipping problems.

History of the American Bureau of Shipping.—As far

as this country is concerned, Lloyd's supremacy has been shattered by the reorganization of the American Bureau of Shipping, also known as "the American Lloyd's." The history of this classification society, which was founded in 1862 closely reflects the history of the American merchant marine since that time. As a result of the rapid decline of the American merchant marine, the prestige and influence of the American Bureau of Shipping also waned and the Bureau would undoubtedly have had to go out of business long ago, had not an insurance company taken over the property and met all deficits of the Bureau. In 1915 when the nation's maritime consciousness began to show signs of reawakening, the plan of reorganizing the Bureau was taken up by a committee consisting of the leading shipbuilders, shipowners and underwriters of the United States. As early as 1900 a tentative agreement had been reached with Lloyd's which outlined certain principles of co-operation between the American and the British classification societies. It was natural, therefore, that the reorganization committee contemplated the resuscitation of the Bureau in more or less close conjunction with Lloyd's. When, however, in January, 1916, at a meeting between Lloyd's representatives and the reorganization committee in which Mr. Stevenson Taylor, the present President of the American Bureau of Shipping, partook, the British representatives declared that all new designs for American ships would have to be submitted to London for approval, the reorganization committee voted unanimously "not to enter into any arrangements with British Lloyd's but to go ahead and make the Bureau what it should be; for it seemed to the members of the committee that any possible arrangement that could be made between the British Lloyd's lion and the American Lloyd's lamb would result in the proverbial arrangement between the two animals,

wherein union could be secured only by their 'lying down together' with the lamb inside of the lion." Thus, on March 1, 1916, the American Bureau of Shipping started under new officers, with the ardent support of shipbuilders, repairers, underwriters and owners throughout the United States. It is entrusted with the classification of the merchant steamships building for the Emergency Fleet Corporation. Its staff of skilled surveyors had to be increased from about a dozen in 1916 to over 200 at the present time. Mr. Edward N. Hurley may be quoted as follows:

Official recognition of the American Bureau.—"The development made by your Bureau is extraordinary, both in personnel and in the character of the work done; and it is beyond question that one of the greatest needs of the future for the proper maintenance and development of an American merchant marine is a strong organization operating on the lines of your Bureau, and developed to meet the needs as outlined in your letter."¹

The support given to the American Bureau of Shipping by the Shipping Board, which is shared by the House Committee on Merchant Marine and Fisheries, has found expression in a Bill introduced in Congress by Representative George W. Edmonds of Pennsylvania, which proposes to render it obligatory for the United States Government's Departments and Commissions to recognize the Bureau. This proposal was virtually accepted and put into effect when the "Merchant Marine Act, 1920" became law.²

The Bureau's growth is indicated by the following figures: Early in 1916, the classification and inspection of the American Bureau extended to only 8 per cent of American-built vessels, while Lloyd's and the Bureau Veritas (French) had

¹ *Nautical Gazette*, November 22, 1920, p. 201.

² See also Chapter XXX, Section 25, of the Act.

it; but by July 1919, the respective figures were 68 per cent for the Bureau and 32 per cent for the two other

ration with other agencies—It should be mentioned, in November, 1916, an agreement was reached between the British Corporation for the Survey and Registry of Shipping and Lines, which insures harmonious action and an international arrangement advantageous to shipowners and builders of ships of the Atlantic, without interfering with the independence and national character of either Society. A similar arrangement was made with the Registre Navale of France and with a newly formed Japanese classification society developed out of the Japanese Imperial Marine Board.

Rules of the American Bureau of Shipping, along with revised Rules of the British Corporation for Transatlantic Vessels, also the New Rules of the American Bureau of Classification for Vessels Employed in the Coastwise, Lakes, Bays and River Service, will be based on the recommendations of the most recent findings of Technical Societies, International Committees and the International Conference on Safety of Life at Sea with such flexibility of application as will make them peculiarly adapted to American standards.

The arrangement immediately removes all difficulties in international load-lines for American classed ships. The Bureau will act for the Corporation in America and vice versa. The classifications will be in effect interchangeable. International classification will be obtainable at a little more cost of single classification and thus will develop-

ment on these lines become real international classification in its best form." ¹

In 1916, the Great Lakes Register, established in 1896 for the registry and classification of vessels on the Great Lakes, was acquired and incorporated in the American Bureau of Shipping as *The Great Lakes Department*. The steam-boat inspection service of the Department of Commerce has accepted the certificate of classification as standard, barring a few exceptions. The Bureau's publication is known as *The Record of American and Foreign Shipping*.

¹ *American Bureau of Shipping*, pp. 11-12.

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CHAPTER XIX

THE HISTORY AND ORGANIZATION OF MARINE INSURANCE

Importance of Marine Insurance.—It is impossible to exaggerate the importance of marine insurance. Without it only the wealthiest individuals and corporations could afford to risk their vessels upon the high seas; without it only such commodities as afford a wide margin of profit could enter into world trade; without it many lands, which to-day are the homes of millions would be deserted. Industries would be lacking raw materials; and raw materials would rot for want of transportation. Marine insurance is the basis of credit, without which commercial loans to importers and exporters would be impossible. It is “an instrumentality of commerce almost as much as the vessel.” It is “the bodyguard of commerce.” The “commercial set” that is the set of the most vital shipping papers, consists of the invoice, the merchant’s bill; the bill of lading, the carrier’s receipt; the draft, or bill of exchange, the merchant’s payment; and the marine insurance policy. Of these the last named is the “document of guarantee” which gives life to the bill of lading, and the draft. Insurance must take its place beside banking and shipping before the instrumentality by which foreign trade is carried on may be called complete.

“Marine insurance bears to commerce the relation of bodyguard rather than mere servile attendant. * * * Of the active forces which influence, control, or forbid

the employment of shipping none has greater effect than the marine insurance power."¹

In his testimony before the sub-committee on Marine Insurance of the House Committee on Merchant Marine and Fisheries, Mr. Edward N. Hurley, former chairman of the United States Shipping Board, said:

"I am satisfied from the experience I have had in connection with the operation of ships, that legislation passed in connection with marine insurance will be the most important part of the legislation the committee as a whole will have to pass on."

Economic services rendered by Marine insurance— Professor S. S. Huebner, of the University of Pennsylvania, Expert in Insurance to the United States Shipping and the Committee on the Merchant Marine and Fisheries, in his valuable reports on the "Status of Marine Insurance in the United States,"² and on "Legislative obstructions to the development of marine insurance in the United States," enumerates the following economic services rendered by Marine Insurance:

- (a) Marine Insurance eliminates the paralyzing effect of worry and fear.
- (b) Distributes losses to ultimate consumer.
- (c) Causes the cheapest distribution of loss.
- (d) Serves as a basis of credit.
- (e) Standardizes types of risks and creates justice between property owners.

Early beginnings of marine insurance.—Marine insurance is essential to shipping. In primitive form, it has

¹ William W. Bates, *American Marine*, p. 182.

² Washington, 1920, Government Printing Office.

been in existence so long as to cause its origin to be lost in the mists of history. About 2,000 years ago, the people of Rhodes, that famous shipping centre of the ancient world, located at the eastern end of the Mediterranean, regulated by law that portion of our modern marine insurance business which is known as "general average." This ancient law has been called "the ark of the covenant of the law maritime." The old Rhodian law provided that "if goods are thrown overboard to lighten a ship, that which has been given for all shall be replaced by the contribution of all."¹ This shows the root idea of marine insurance, which is to distribute amongst a number of individuals a loss which otherwise would be crippling to anyone of them. In this respect marine insurance is no different from other important branches of the insurance business. As conducted at present, marine insurance developed in Italy, in those

¹ An interesting contribution to the early history of general average was made by Mr. G. H. Henderson in an address to the Insurance Institute of London. We quote the following: "Commerce continued to flourish in the Mediterranean after the fall of Phoenicia, Rhodes, and Carthage, and although the Romans were never a race of seamen in the same sense as other great sea-bordered peoples, they commanded the sea and understood its power, and in their legal fashion they codified its customs in the Justinian Digest, the earliest complete enactments dealing with general average, which have been preserved. Although these early Roman mariners hugged the shore too fondly, their ships grew in size, as we may see from the size of the vessel which carried a cargo of wheat and 276 people described in the Acts of the Apostles. In the description of the voyage it is recorded that 'they began to throw the freight overboard (the cargo), and the third day they cast out with their own hands the tacklings of the ship.' So far as I know this is the only example in the Scriptures of a general average act. I have come across no allusions to this classic example among the numerous writers on general average, and though I may be mistaken, it appears to me it has been overlooked by them. Of course, in this case ship and cargo were lost, and the general average contribution was not collectable."—(See *The Nautical Gazette*, June 19, 1920, p. 947.)

days when the city states of Lombardy and Venice ruled the seas. The Italian origin is clearly traceable in the etymology of the most important terms used in marine insurance business. "The word policy itself is derived from the Italian *polizza*, and in like manner the word average in marine insurance has been introduced into the English language from the Italian, perhaps through the French. The original Italian word is *avaria*, meaning loss by damage; the French word is *avarie*, and has the same meaning; and it is this same meaning that must be attached to the word average when used in the business of marine insurance. Average, as applied to particular and individual losses at sea, with the word particular prefixed to it, merely confuses one unless its technical significance is known. The phrase, particular average, contains a contradiction in itself to the ordinary reader, but when it is explained that average here means simply loss by damage, the phrases so frequently used in marine insurance transactions are seen to have a special meaning. In actual practice they give rise to special rights and responsibilities where a ship and cargo have suffered damage."¹

The Rolls of Oleron.—Later on, when as a result of Vasco da Gama's discoveries, the centre of gravity of the shipping trade shifted to the European countries bordering the Atlantic Ocean, the Rolls of Oleron, an island in the Gulf of Biscay, served as the model after which the insurance laws and rules of England were developed. The insurance policy itself developed out of the "loan on bottomry" and was still governed by the bottomry loan contract long after the loan had ceased to be made and the interest payment had become a premium. This is

¹ Kirkaldy's *British Shipping*, p. 240. See also Appendices A and B.

one of the many examples where a legal form is retained long after changing conditions have altered the substance covered by the law.

Marine insurance compared with transportation insurance.—Insurance plays a much more important part in ocean transportation than in land transportation. This is partly due to the fact that marine transportation involves greater and more numerous risks, and partly because by law, the liability of the railroads is fixed in such a way as to render it unnecessary for the shipper to insure his goods. This discrepancy in the law governing the respective liabilities of land and water carriers is based on the difference in the conditions prevailing in the two branches of transportation. The railroad as a corporation, owes its existence to the state which grants its franchise. The steamship business is exposed to international competition, and restrictions placed upon a country's water carriers must needs take this fact into consideration. This is illustrated by the law of 1852, which was passed by Congress in order to place our own shipping upon a basis at least as favorable as that of the British. By that law, the carrier by sea was exempted from the old common law liability of common carriers and his liability was limited to the value of the ship after the accident.¹ Again, marine transportation has a history which antedates that of the railroad by thousands of years, and which has left its imprints clearly discernible upon the laws and statutes which govern the steamship business of to-day. This explains the difficulties which the Interstate Commerce Commission meets in trying to prescribe the substance of a uniform bill of lading to be put in force

¹ *Proceedings of the Academy of Political Science, 1915-1916, p. 129.*

under the provisions of the Transportation act of 1920, and applicable both to railway and ocean carriers. Leading steamship companies¹ argue that the Interstate Commerce Commission "has no power to require the ocean carrier to participate in any particular bill of lading, but its power is limited to making rules and regulations to prescribe the form of a through bill of lading to be issued by the railway carrier in which the ocean carrier may choose to join." The modern tendency is toward covering land and water transportation risks by one policy.

"The modern 'warehouse to warehouse' clause enables goods to be protected from the time they leave the shipper's warehouse in the interior of this country, through all the various stages of the journey either by water or land carriers, until they are safely delivered into the warehouse of the foreign consignee. In fact, it is asserted that modern marine insurance should justly be called 'transportation insurance.'"²

Carrier's liability under the Harter Act.—The law which at present governs the liability of carriers by water, in the case of freight shipments from American ports, is the Harter Act of February 13, 1893. (See Appendix D.)

This Act holds the carriers liable only under the following conditions:

"(1) 'Negligence, fault or failure in proper loading, stowage, custody, care or proper delivery'; (2) failure to exercise due diligence, properly equip, man, pro-

¹ See *The Journal of Commerce* of February 11, 1921.

² Report by S. S. Huebner, *op. cit.*, p. 5.

nd outfit' their vessels; (3) failure to exercise due care in making a vessel seaworthy and capable of performing her intended voyage.'"¹

In the language of the act itself, the limitations are as follows:

"The owner of any vessel transporting merchandise, property to or from any port in the United States or elsewhere shall exercise due diligence to make the said vessel in all respects seaworthy and properly manned, equipped, and supplied, neither the vessel, her owner, charterers, agent, or charterers shall become or be held liable for damage or loss resulting from faults or negligence in navigation or in the management of said vessel, nor shall the vessel, her owner, or owners, charterers, agent, or master be held liable for losses arising from the perils of the sea or other navigable waters, acts of God, public enemies, or the inherent defect, quality or condition of the thing carried, or from insufficiency of the vessel or seizure under legal process, or from loss resulting from any act or omission of the shipper or receiver of the goods, his agent or representative, or from any person attempting to save life or property at sea, or from any deviation in rendering such service."²

Actual provisions of the bill of lading.—Because liability of the carrier is limited by contractual terms contained in the bill of lading. The following liability clauses contained in a typical bill of lading are:

¹On and Huebner, *op. cit.*, p. 237.

²An interesting discussion of the legal aspects of the Harter is given in *Ocean Shipping*, Chapter XL.

**New York and Cuba Mail Steamship Company
(WARD LINE)**

BILL OF LADING

Received at NEW YORK by the NEW YORK AND CUBA MAIL STEAMSHIP COMPANY (the term Carrier hereinafter used being intended to include said Company and any substitute or continuing carrier) from the Shipper named on the back hereof, the packages described on the back hereof (hereinafter called the Goods, the Carrier's responsibility in respect of description thereof being limited as hereinafter provided), in apparent good order and condition; **TO BE TRANSPORTED** by steamship named on the back hereof (subject as to said steamship to substitution and other liberties as hereinafter provided, the term Vessel hereinafter used being intended to include said steamship and any substituted or continuing vessel) to the destination named on the back hereof, or as near thereto as the Vessel can safely get, and there delivered in like good order and condition, in manner as hereinafter provided, upon payment of any unpaid freight and other sums payable by Shipper, Consignee and/or assigns hereunder, to the Consignee named on the back hereof, or order if so provided, subject always to the

TERMS OF THIS CONTRACT BILL OF LADING WHICH ARE HEREBY MUTUALLY AGREED UPON AS FOLLOWS:

1. The freight is adjusted in consideration of all the terms and provisions of this contract whether written, printed or stamped.
2. All particulars herein mentioned of the Goods except only the number of the packages with the marks thereon are deemed by the Shipper and the same including any stamp as to size weight quantity, or the like imported by the character of packages designated are unknown to the Carrier and shall not constitute a claim against the Carrier, any part of the Carrier's description of the Goods as hereby supplied for, which shall be deemed only representations of the Shipper.
3. The Goods are uninsured in shipment transportation delivery or otherwise by the Carrier or however else the same may be situated, shall be exonerated by riots strikes ~~labor~~ ^{labor} lockouts or labor troubles of Carrier or employees or otherwise, shortage of labor, fuel conveyances or roads, lack of facilities of any sort; accumulation of cargo, and the like, and notice to the liability of the Carrier contained in this contract shall be
4. The Carrier's responsibility in respect of the Goods as a carrier shall not attach until the Goods are actually loaded for transportation upon the Vessel, and shall terminate, without notice, as soon as the Goods leave the Vessel's tackle at destination or other place where the Carrier is authorised to make delivery or end its responsibility. Any responsibility of the Carrier in respect of the Goods attaching prior to such loading or continuing after leaving the Vessel's tackle as aforesaid, whether the Goods are in course of lighterage by the Carrier or however else the same may be situated, shall be the same as that only of a warehouseman, without liability on the part of the Carrier, except for want of ordinary care and all conditions, exceptions, exemptions, and limitations of

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particulars or by reason of any other act or omission of Shipper, Consignee and/or assigns.

7. In case of a single article or package exceeding two tons in weight the true weight thereof shall be declared at time of delivery to the Carrier; in case the weight declared is incorrect and in consequence of reliance thereon any loss or damage arises, either to the article or package, or to the Carrier or to others, or any increased charges or expenses are incurred by the Carrier in handling or caring for any such article or package, the same shall be borne and paid solely by the Shipper, Consignee and/or assigns.

8. The Vessel shall have liberty hereunder, either before or after proceeding to or toward any port of discharge or transhipment, to proceed to or toward, call, enter, or stay at any port or ports, although not upon the usual or any route to, and although in a contrary direction to or beyond the port of discharge or transhipment, once or oftener, backwards or forwards, in any order or rotation, for any purposes whatsoever, and the same shall not be deemed a deviation but be deemed within the voyage hereby intended as fully as if specifically described herein; and the Vessel shall have liberty also to sail in or out of ports and to proceed with or without pilots, to tow or assist vessels in any situation and to deviate for the purpose of saving life or property; and in case of salvage services rendered to the Goods during the voyage by another vessel belonging to or in the service of the same Carrier, such services shall be paid for as fully as if the salving vessel belonged to or was in the service of strangers.

9. The Carrier shall have liberty, in its discretion, before or after shipment or loading, to substitute, or ship the whole or any portion of the Goods by any other steamship or steamships, although prior or subsequent; and shall have liberty in its discretion, at any port or place, to tranship, land and tranship or forward the Goods, or put into store, craft or other available place, and thence tranship and forward the same to, or on route to destination, by any ship or ships, carrier or carriers, by land and/or water, subject as to such continuing carrier to the provisions of the usual bill of lading of such carrier, whether issued or not, and upon the delivery of the Goods into the custody of a continuing carrier or representative, shall thereupon be relieved of all further responsibility for the Goods, and the clean receipt of the

... and all advance charges due and payable to the New York and "Cunard Company upon receipt of the Goods by the latter; and the same and any further sums becoming payable to the Carrier hereunder and extra compensation, demurrage, forwarding charges, general average claims, and any payments made and liability incurred by the Carrier in respect to the Goods (not required hereunder to be borne by the Carrier) shall be deemed fully earned and payable to the Carrier at any stage before or after loading, of the service hereunder, without deduction (if unpaid) or refund in whole or in part (if paid). Goods or Vessel lost or not lost; and the same shall be payable in United States currency and in New York funds; and the Carrier shall have a lien on the Goods or any part or proceeds for the whole thereof; and the Shipper, Consignee and/or assigns shall be jointly and severally liable therefor, and notwithstanding any lien therefor has been surrendered. Full freight shall be payable on damaged and unsound Goods. The Carrier may collect freight on bill of lading weight, measurement or quantity, and, if gross weight, measurement or quantity delivered exceeds weight, measure or quantity on which freight may be computed, the Carrier may collect freight on such excess, unless shown to have been caused by absorption of water during the voyage. Any error in freight or other charges or in the classification herein of the Goods is subject to correction, and if on correction the freight or charges are higher, the Carrier may collect the additional amount. Should a package consist of several parcels for more than one person, full freight shall be paid on the parcels for each person as if shipped and consigned as a separate package. If there be an enforced interruption or abandonment of the voyage at a port of distress or elsewhere and the Goods or any part be forwarded, the cost thereof, including extra compensation if performed by vessels in the service of the Carrier, shall be paid by Shipper, Consignee, and/or assigns.

9. The Shipper, Consignee and/or assigns, shall pay any duty, tax, impost, fee or the like for which the Carrier may be charged upon account of the Goods, not due to the Carrier's fault, and also any fine or penalty incurred by, or loss

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and all sums due the Carrier in respect of the Goods from
previous Contracts and/or services and all other charges (in
the Goods and the Carriage there shall when made be discharged of all
liability in respect of the Goods except as provided for this
Agreement).

1.1 The Carrier shall not owe any duty to Notify Consignee (or
any other of the agreed or designated) of the Goods sent to
him for any loss or damage suffered from fire, theft, inci-
sion, robbery, pilferage, collision, stranding, damage by
sea-water, breakage, or damage by any other cause.

1.2 The Carrier shall be liable with limitations for damage
to Goods caused by negligence, carelessness, or want of skill
in him made, or a general negligence would be required

and the State of Michigan, are in the process of applying itself at any time for its admission into the Union, in order to secure a government for the department. The State of Michigan has been organized and incorporated by the Legislature of the State of Michigan, and is now in full possession of the powers of a State Government. The State of Michigan has been admitted into the Union, and is now in full possession of the powers of a State Government.

Shipping Contracts and/or shipping documents representing or any and otherwise received by shall at Carries a general goods not otherwise accounted for in equation for application to the shippers Contract of like goods according to the short term and be received in good delivery for the return address and if any Goods were lost or damaged or handled and for services rendered general of like kind but of different marks or numbers which shall carry a certain portion be claimed to constitute a part of the same and be accepted by Consignee and/or consignee as good shipping documents.

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premium hereunder) not exceeding \$100 000 per package nor \$8.00 per cubic foot (or such other value as may be stated herein), nor shall the Carrier be held liable for any profits or increase of price or value over such cost not exceeding said value, nor for any special or consequential damage and the Carrier shall always have the option of replacing any lost or damaged Goods.

2c. If there is opportunity to discover by examination, before removal of the Goods, that loss of contents or shortage of, or damage to the Goods exists or may exist the Carrier shall not be liable for any such loss, shortage or damage, unless notice of claim therefor be presented in writing to the Carrier or to the master or agent of the Vessel, before removal of the Goods. If there is no opportunity to discover, before removal that such loss, shortage or damage exists or may exist, then the Carrier shall not be liable therefor unless such notice of claim be so presented within 48 hours after removal of the Goods. The Carrier shall not, in any event, be liable for any claim or demand arising hereunder or in

respect of the Goods, unless notice of the claim be presented in writing to the Carrier within thirty days after delivery of the Goods to the Carrier. No suit or proceeding to recover for or upon any claim or demand shall be maintained against the Carrier or Vessel or owners thereof, unless commenced within six months after delivery of the Goods to the Carrier, and the lapse of such period shall be deemed a complete bar to recovery in any such suit or proceeding not sooner commenced, notwithstanding the Carrier may be a non-resident or a foreign corporation. Nothing shall be deemed a waiver of the provisions of this article except a written express waiver signed by the carrier.

23. In case of any loss or damage for which the Carrier shall be liable, the Carrier shall to the extent of such liability have the full benefit of any insurance that may have been effected upon the Goods or against said loss or damage.

24. This Bill of Lading, duly endorsed, shall if required, be given up to the Carrier in exchange for a delivery order.

BILL OF LADING (REVERSE SIDE)

25. The Shipper, Vessel, Consignee, Destination and Goods referred to Overpage as mentioned or described on this side (back) hereof are as follows:

Shipper.....	Vessel.....	Destination of the Goods.....
.....	.....	With privilege to substitute, tranship and other privilages as hereinbefore provided.
Consignee Order of.....	.....	Notify (If Consigned to Shipper's Order)

OCEAN SHIPPING

SHIPPER'S DESCRIPTION OF GOODS

(Carrier's responsibility for description being limited as hereinabove provided)

20. AND FINALLY that in accepting this Bill of Lading the Shipper, Owner and Consignee of the Goods and holder of the Bill of Lading agree to be bound by all its provisions on this date and overseas, whether written, printed or stamped, as fully as if set forth by all of them.

Dated at NEW YORK, — 19

For NEW YORK AND CURA MALE STEAMSHIP CO.

1

Merchants particularly object to one clause found in the bills of lading of some steamship companies:

"Neither the carrier, the vessels nor the agents shall be liable for any claim for loss of or damage to goods in any event unless notice in writing of the claim shall have been presented to the ship's agents at the port of discharge before the removal of the goods from the wharf along side which the ship is discharged."

The clause is said to be both unreasonable and unworkable, and in the long run will do more harm than good, even to the carrier.

Organization of marine insurance business.—At the present time, marine insurance is carried on, primarily, by underwriting associations and marine insurance companies. In addition to this, certain kinds of marine risks are insured by government bureaus, and a few very large shipping concerns are undertaking their own insuring.

By far the most important underwriter's association is Lloyd's which, since 1774, has been doing business in the Royal Exchange in London, and which was incorporated in 1871. In the previous chapter we have given the history of Lloyd's Registry of British and Foreign Shipping, which is a separate organization from the corporation of Lloyd's though the controlling interests are largely identical and the work of *Lloyd's Register* serves as the basis of that of the underwriters' association, especially as far as hull insurance is concerned. We now refer to the underwriting business only.

Lloyd's business methods.—Although incorporated, Lloyd's does no marine insurance as a corporation. It is an insurance exchange where each of the approx-

imately four hundred members has a desk allotted to him at which he, individually and independently, pursues his business as an underwriter, subject to the rules of the exchange. The technique of this business is described as follows:

"An English merchant on shipping goods, sends to the Royal Exchange a memorandum giving particulars of the shipment,—kind of goods, number of packages, values, destination, rate of premium desired, etc. This is put into the hands of a broker who dispatches one of his clerks on a tour around the desks of the other members. Those who wish to 'take a line' on that particular risk initial the 'slip,' as it is called, that is, underwrite it, with the proportion of the total each wishes to assume—perhaps £50, perhaps £100 or £200, seldom more, except in risks involving very large amounts of money. Five or six underwriters usually cover a risk of \$2,000, twenty-one of \$10,000. The broker then sends a 'covering note' to the shipper, serving until a regular policy can be made out in due form endorsed with the signatures of the various underwriters who have agreed to share in the risk."¹

To give a concrete example of a policy indorsed by underwriters we quote Captain Robert Dollar:

"The ship was insured for \$180,000. I had a Lloyd's policy for it, and on the back of it there were 103 different signatures for various amounts. Some for a hundred pounds, some fifty pounds, some five hundred pounds, and so on. Lloyd's had taken their insurance and then re-insured it and marked it all on the back; so each paid the amount that was on it in his name."²

¹ B. Olney Hough, *Ocean Traffic and Trade*, pp. 291-292.

² *Sixth National Foreign Trade Convention*, p. 499.

Lloyd's information service.—The business of underwriting is unthinkable without a complete system of collecting and disseminating marine intelligence. Therefore, Lloyd's agents are to be found in every port and the information collected by them and communicated to the London headquarters as promptly as modern facilities permit, is published in the official daily publication known as *Lloyd's List*, the early history of which was given in a previous chapter. Besides this, Lloyd's publishes the *Index* which, in a handy form, gives detailed information concerning particular vessels; the *Register of Captains*, which is a biographical dictionary of certified masters of British ships; and the *Record of Losses*, also known as the "black book."

America favors company plan.—In the United States, little or no marine insurance business is done in this fashion. In this country the company plan of marine insurance is particularly important. This does not mean that other countries are without important marine insurance companies; indeed, the Royal Exchange and the London Insurance Corporation are the oldest in the world, having entered into competition with Lloyd's as early as 1720. Under the company plan of marine insurance, one company takes the whole of any proffered risk and frequently re-insures portions of the risk in other companies. While this form of marine insurance dates back to the eighteenth century it gained its present significance only during the nineteenth century, when many large companies were founded in important shipping centres, particularly London, Glasgow, Liverpool, Philadelphia and New York. Until recently, the bulk of the American marine insurance was placed with foreign con-

cerns and less than a dozen corporations were known to carry on a large marine insurance business.

Extent of foreign control over American marine insurance.—Mr. John Barton Payne, now Secretary of the Interior, and at one time Chairman of the Shipping Board, summed up the marine insurance situation in the United States as follows:

"Of the total marine insurance originating in the United States, at least two-thirds is controlled by non-admitted foreign companies or by the branch offices of admitted foreign companies, and only one-third by American companies. At least 20 per cent of all marine insurance originating within the United States is exported directly abroad to be placed with non-admitted underwriters or with the home offices of admitted foreign companies. In the case of American hull insurance at least 50 per cent is thus exported, and much the same situation also exists in the case of builders' risk insurance.

Moreover, owing to the absence of a domestic market sufficiently large to assure a proper spread of risks through re-insurance, many American companies are compelled to place a very substantial part of their re-insurance with foreign underwriters, and to a very large extent with underwriters not admitted to transact business within the United States. But this re-insurance, it should be noted, goes abroad with very little being given to American companies in exchange. With reference to hull insurance, particularly, the overwhelming majority of American companies report that they do not emphasize this branch of the business because of its unprofitableness, and because the competition of companies located in foreign countries and the facility with which owners

rokers export marine insurance to such countries
de any hope of success."

v is this large extent of foreign control to be ex-
i? It is claimed¹ that the source of foreign
th is to be found largely in wise accumulation of
surpluses earned in gradually developing a world-
narket; in a broader spread of risk and broader re-
nace facilities; in a close union with banking and
ng interests; in freedom to combine and form com-
ies of interest; in the permission to write numerous
of insurance and in a smaller tax burden, a smaller
ead charge (owing to foreign standard of office
s, etc.), and finally in the support of their home
ants and vessel owners.

Awakening of American marine insurance.—Just as
merican marine insurance business has suffered a
decline since the Civil War, because of the decay
merchant marine, so, a recent revival of our mari-
ninterest has given a new impetus to the develop-
of our marine insurance business. Efforts are being
to modify existing laws, and to create new laws in
a way as to encourage American insurance com-
to enter into competition with foreign under-
s and insurance companies. It is keenly felt that
a national standpoint it is unwise to submit infor-
regarding every conceivable detail of our foreign
to foreign insurers. The low rate of sterling ex-
e has been an important factor in diverting Ameri-
marine insurance to American companies, because
surer has to insure for a larger sum to take care
loss suffered in converting pound sterling into

. Huebner's *Report*, cited above, p. 27.

dollars, or else pocket the loss. In many cases this situation has resulted in putting the American insurance business on a "dollar account basis," both policies and premiums being figured in dollars instead of pounds sterling. Largely basing its conclusions upon the testimony of Professor S. S. Huebner,¹ in which he gave a vivid account of the lamentable condition of marine insurance in the United States, the sub-committee of the House Committee on Merchant Marine and Fisheries, in its report makes the following recommendations:

Recommendations of House Committee on Merchant Marine and Fisheries.—“Your Committee has given much thought to available ways and means of bettering conditions. It has reached the conclusion that the subject must be approached from at least three directions, and collective assistance along all these lines is necessary. The remedy lies partly in (1) self-help on the part of American companies through co-operative action, especially in the formation of a comprehensive insurance bureau for re-insurance purposes; (2) federal assistance, and (3) state help through the removal of unnecessary and paralyzing legislative restrictions.

“Your committee believes that the Federal Government may be of further assistance in several respects, and desires to recommend the following:

“1. That marine underwriters should be assured of the legality of combinations and associates designed to facilitate re-insurance or to extend underwriting activities to foreign countries. A surprisingly large number of underwriters expressed themselves to the committee as fearful of the legal consequences that might attach to

¹ See also his report on *Status of Marine Insurance in the U. S.*

creation of such associations or combinations. To end, it will be advisable, and even if unnecessary do no harm, to free all such co-operative efforts from possible operation of the Sherman and Clayton anti-acts.

That the Federal one per cent. tax on marine insurance premiums be repealed. There should be no taxes upon insurance except on net profits.

That legislation be enacted for the incorporation on a liberal basis of re-insurance companies in the District of Columbia.

That a liberal marine insurance law be enacted for the District of Columbia. This recommendation was heartily supported before the committee by the Association of Marine Underwriters of the United States, chiefly on the ground that it would serve as a model for duplication in the various States.

Your committee has also had its attention called to many underwriting interests to the peculiar status of the adjusters in this country as contrasted with their quasi-judicial position in other countries. Abundant evidence was offered to show that the existing system is susceptible of serious irregularities. The committee feels that the question of whether adjusters should have any less connection with either brokers or underwriters is worthy of further investigation."

American insurance pools.—Some of these recommendations have since been put into effect. We mentioned in the previous chapter how the Merchant Marine Act, which is designed to aid the American Bureau of Shipping, also comes to the assistance of the underwriters. The details of the Act will be discussed in Chapter XXX.

But we mention here the fact that by the new law, marine underwriters are exempted from the restrictions of the Sherman Anti-trust Law. Taking advantage of this privilege, fifty American insurance companies have signed an agreement under which three syndicates are to be formed, described respectively as "A, B, and C."

"Syndicate A" will supply at cost a surveying, inspection and loss service for Shipping Board and privately owned vessels. "Syndicate B" will take care of the mortgage interest of vessels sold by the Shipping Board and partially paid for, the underwriting capacity on a single hull being \$2,000,000. "Syndicate C" will write approved steel ocean going hulls, privately owned, with a \$2,500,000 underwriting capacity upon a single hull. The first two of these syndicates is to be entirely American; the third takes in foreign admitted companies to a limit of approximately one-third of the syndicate's capacity.¹

Commenting upon these developments, Admiral Benson said: "Recent Congressional investigation of marine insurance demonstrated conclusively that our leading foreign competitors use marine insurance as a powerful national commercial weapon, while there has been a woeful absence of efficient facilities of our own. Fully two-thirds of all marine insurance originating in the United States was found to be under foreign control. These undesirable shortcomings, it is believed, will be remedied by the newly created syndicates. By acting through a single organization, American companies are placed in a position to provide adequate reinsurance facilities, to obtain a proper spread of business, to greatly reduce their overhead charges, and to meet promptly and

¹ See *Nautical Gazette*, July 10, 1920.

fectively any foreign competitive situation that may arise."

Reaction of Americanization process on British interests.—This process of "Americanization" is said to be annoying British insurance interests. On the one hand they resent the aggressive features of the Jones Law and on the other they are hard hit by a recent amendment to the New York insurance law requiring admitted reign companies to report all American insurance business and to keep heavy reserves in this country. In fact, it was reported that some British concerns refused to underwrite American marine risks at their home office.¹ Commenting on the reported decision of prominent London underwriters to refuse to accept American risks until certain provisions of the new American merchant marine Act have been modified, Senator Jones declared it was "just what we need to awaken our people to the menace of alien domination in important lines of business. This talk of embarrassing American business interests by withdrawing British marine insurance" he continued, "will accomplish speedily just what we have hoped to accomplish even though slowly and by great effort under the Merchant Marine Act, 1920."²

Self-insurance.—Of recent years there has been a growing tendency for steamship companies to insure their ships themselves. In some cases this self-insurance even covers passengers, baggage and cargo, but hull insurance is more commonly practiced in this way. Two methods of self-insurance may be distinguished. The one practiced by such "portmanteau" companies as the Hamburg-American Line was before the war and the

¹*Nautical Gazette*, July 3, p. 24.
²*New York Times*, June 26, 1920.

Peninsular and Oriental is to-day, is self-insurance in the proper sense of the word. The other method is more properly termed mutual insurance and is practiced by large steamship owners' associations or clubs. As an example of the first type, the case of the Hamburg-American Line may be cited, which is supposed to have constructed the *Imperator*, *Vaterland* (now the *Leviathan*) and the *Bismarck* out of the money which otherwise would have gone to insurance companies in the form of premiums. The plan is based upon the fundamental idea that what a steamship company wants in the case of the loss of one ship, is another ship, and that it is better to have this ship provided beforehand than to start building the new ship after the old one is lost. The most prominent example of the mutual insurance association is that organized in Liverpool in 1913, with Sir Norman Hill as Manager and Secretary:

"The object of this new undertaking is to cover war risks. As these lines are being written, the membership includes the management of about 433 vessels with a value of somewhere about £29,000,000; and there is a probability that all the great passenger lines will eventually join."

"The present scheme is to insure war risks only when Great Britain is neutral, and so cover the risks of members until their ships arrive in a safe port after a war has been declared. In the event of a ship entering a neutral port she will be covered for a period of ten days after arrival, or should the port cease to be neutral during that time, she would be covered until arriving at some really safe port. The scheme does not contemplate covering any risks that would arise after this country is at war

with another nation; this is too comprehensive a subject and only the nation under circumstances, as they arise, can possibly undertake to deal with it."¹

An interesting case which represents a cross between self-insurance and government insurance is that of the United States Shipping Board, which, by setting aside a revolving sum of 25 million dollars, attended to the insurance of the ships under its control. Government insurance is usually confined to war risk insurance only and is undertaken only because private capital seems inadequate to take care of this particular risk, principally for the reason that sufficient data are lacking which permit an exact calculation beforehand of the probable loss.

Re-insurance; definition and general purpose.—A word should be said about re-insurance. "Re-insurance may be defined as the practice whereby one underwriter (the original insurer) transfers his liability under a policy, either in part or in whole, to some other underwriter (or a group of underwriters) known as the re-insurer.

The fundamental purpose of re-insurance is to give underwriters the benefit of the greater certainty that results from a proper application of the law of average. By spreading their liability over a large number of risks, and retaining only a moderate amount in each instance, they succeed in stabilizing their business. Each company is enabled to accept policies for large amounts and yet can protect itself against staggering losses by adjusting its risks in such a manner as to preclude the possibility of any serious inroad into its capital and surplus."²

¹ Kirkaldy, *British Shipping*, pp. 255-256.

² S. S. Huebner, *Report on Status of Marine Insurance in the United States*, p. 35.

The importance of re-insurance can hardly be exaggerated. Without this chance of reducing the risk of their business activities many of the smaller insurance companies would soon disappear from the field. It happens that one insurance company has in force, at one time, over one hundred re-insurance contracts with other companies. A large risk is thus distributed sometimes among scores of companies. Sometimes underwriters agree to give their re-insurer a definite proportion of their business. This is called "share or participating re-insurance."

Re-insurance is often handled by so-called re-insurance pools. These are arrangements whereby a number of companies agree to share all insurance business on a given commodity or on all business within a given territory on the basis of certain agreed propositions. Such pools are for instance:¹ the cotton re-insurance agreement, burlap agreement, joint grain certificate, etc.

¹ *Ibidem*, p. 39f.

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CHAPTER XX

ELEMENTS OF MARINE INSURANCE PRACTICE

Insurable interests and some important risks.—The two most important branches of marine insurance are hull insurance and cargo insurance. Besides these, however, freight charges may be insured, also profits from the transportation of the goods as well as any other interest connected with the successful termination of an ocean voyage, as long as this interest can be measured by a monetary standard.

These various interests may be insured against a considerable number of risks and perils, particularly those losses occasioned by the so-called "perils of the sea." This term refers only to fortuitous casualties of the sea and covers only such losses as are caused by storms, fog, lightning, icebergs, derelicts, or other marine obstruction, stranding, foundering, collision with another vessel or with marine structures, or any other unavoidable damage to property resulting from the elements. In case of collision, two kinds of risks must be distinguished, namely, those to which the property of the insured is exposed and those which arise out of the liability for damage sustained by other vessels, if the shipowner or his agent is at fault in causing this damage. It should be understood that chafing or ordinary wear and tear of cargo—practically certain on a sea-voyage—are not included in "perils of the sea"; only an unusual occurrence is provided against, such as shifting of cargo, caused by stress of weather, damage by sea-water, and such other casualties as may be covered by agreement in each individual

case. Nor is the property insured against risks arising from its own inherent defects.

Special risks.—Special insurance must be provided for fire risk, jettison, *i. e.*, the throwing overboard of part of the cargo, or casting away the masts, spars, rigging or fittings of vessels for the purpose of lightening or relieving the ship in case of storm or accident for the common good; barratry, which includes all forms of fraud and knavery on the part of the master of the vessel or the crew, such as wilful scuttling or abandonment of the vessel. Also the loss from theft or pilferage must be arranged for especially.

All risks of war are excluded from the ordinary marine policy. They are covered by a separate contract or by endorsement on the policy. The term "war risk" covers losses of ship or cargo caused by an enemy, pirate or man-of-war.

A sample copy of a certificate of insurance against war risk is found on page 391.

Meaning of "all other perils."—The term "all other perils," as legally interpreted, includes only risks or perils similar to those distinctly stated in the policy contract. By arrangement, all kinds of clauses may be written into a marine insurance policy, covering such risks as are attached to mule-back transportation in the Andes, leakage of liquids, breakage of machinery, etc. Indeed, we might say that the marine insurance policy may be made to cover practically every conceivable transportation risk to which any oversea shipment is subjected from the time that it leaves the manufacturer's plant—possibly far inland—until it reaches the consignee, who may also be located hundreds of miles from the port of debarkation.¹

¹ The term marine insurance is applied to many inland shipments which do not touch a boat at all; cf. cotton transportation within the United States.

**CERTIFICATE OF INSURANCE
AGAINST
WAR RISK ONLY**

4

Insurance Company of North America

PHILADELPHIA *To SAMPLE*

\$ 325.00

New York, April 7, 1917

This is to Certify, That on the 7th day of April 1917

this Company, in consideration of the premium agreed to be paid insured,

Kansas Paint & Varnish Mfg. Co.

for

Three Hundred and Twenty-five Dollars

War Risk on 22 cases of paint

valued at sum hereby insured, per

British S/S Yardi

Warranted sailing on or before April 15, 1917.

from New York to Montevideo

The insurance covers only the risk of capture, seizure or destruction or damage by man-of-war, by letters of marque, by belligerent actions, requisitions, detentions and acts of belligerent prisoners and people authorized by such in consequence of hostilities between belligerent nations; but excluding clause for delay, deterioration and/or loss of market and war risk not to abandon in case of capture, seizure or detention, until such indemnification of the property insured, not until after three months of such indemnification is given to this Company. Also warranted not to abandon in case of blockade, and from any port or place by land or water or compression of blockade, or of any attempt to break blockade, but, in event of blockade to be allowed to proceed to nearest portland there and the voyage.

Warranted covering while navigating or transiting any risks on land.

Warranted no German, Austrian or Turkish ownership, interest, consignee or destination; and warranted free of contraband on the ground of such ownership, interest, consignee, or destination.

On shipments to neutral countries in Europe it is warranted that the bills of lading shall show the name and address of the final consignee.

In case of any loss or misfortune, it shall be lawful and necessary to sue for the same, his or their factors, servants and agents, to sue, labor and travel for, in and about the defense, safeguard and recovery of the said goods and merchandise, or any part thereof, without prejudice to this insurance, nor shall the acts of the assured or insured, in recovering, saving and preserving the property insured, in case of disaster, be considered a waiver or an acceptance of abandonment; to the charges wherof, the said Insurance Company will contribute according to the rate and quantity of the sum herein insured.

In case of loss, each sum to be paid in thirty days after full proofs of loss, proofs of interest, and adjustment exhibited to the Insurer.

It is hereby understood and agreed that, in case of loss, each sum is payable to the order of **Federico Gomez & Cia**, **Montevideo**, *as receiver of this policy, which conveys all rights of the original owner or holder provided for the purpose of collecting any sum and (as respects third parties) is free from any liability for unpaid premiums.*

In case of claim under this policy immediate notice is to be sent to this Company at Philadelphia or to Messrs. W. E. Webster & Co. at London, England.

Under certificate issued in Dollars and payable abroad, claims to be settled at the current rate of Exchange.

Not valid unless Counter-signed

by Platt & Farnam

Counter-signed

Platt & Farnam

SAMPLE

Printed

Observe to be affixed according to the usage in Lloyd's, but subject to the conditions of the policy.
Messrs. W. E. WEBSTER & CO., 3 Lime Street Square, London, England, are the Attorneys of the Company, on whom service of process can be made.
Notice to appear with the Admiralty Court of Great Britain, in order to collect a claim under this Certificate, & must be served within two days after its receipt in the United Kingdom.

MARKS AND NUMBERS	
	1-22

Portuguese Lettered Revenue Stamp This guaranteed by the Insurance Company of North America
Under Treasury Decree No. 2196.

**"ALSO WARRANTED FREE OF CLAIM FOR LOSS, DAMAGE OR EXPENSE
IN CONSEQUENCE OF ANY PROHIBITION, RESTRICTION OR EMBARGO, OR
BY THE GOVERNMENT OF THE UNITED STATES OF AMERICA OR OF
ANY VIOLATION OR ATTEMPTED VIOLATION THEREOF."**

**WARRANTED FREE FROM ANY EXPENSE, LOSS
AND OR DAMAGE ARISING FROM CAPTURE, SEIZURE,
ARREST, RESTRAINT, PREEMPTION OR DETAINMENT
BY THE UNITED STATES GOVERNMENT OR THE
GOVERNMENT OF ANY STATE THEREOF."**

B/L No. 4182



American Association of Manufacturers.

Different losses.—Marine insurance may offer protection against various kinds of losses. In the first place, a policy may be taken out to cover the "total loss" of the vessel, its freight, cargo, profits or other insurable interests. A distinction is made between "actual total loss" and "constructive total loss." The first covers a total destruction, or damage to such an extent that the property is absolutely no longer of practical value to the insurer. Constructive total loss, on the other hand, is sustained in cases where property, although but slightly damaged, is, nevertheless, owing to surrounding circumstances, placed in such a way that it is of no further value to the insurer. The usual example cited for this case is that of a vessel which, although but slightly damaged, must be abandoned. In this case, the insured gives notice of abandonment and obtains the full amount of the insurance on a "constructive total loss."

"Partial loss" is a loss of a portion of the thing insured. "Partial loss" may be settled in accordance with either "particular average" or "general average" rules. A "general average" loss is one "arising out of sacrifices made or extraordinary expenses incurred for the preservation of the ship, cargo and freight money, for the benefit of all interests. This is assessed ratably against all property involved. It is a voluntary and intentional extraordinary sacrifice to protect all the common good. A sacrifice to protect the ship alone, or the cargo alone, is not covered by general average. It is the opposite of an accidental loss caused by a maritime peril. A loss caused by water to extinguish a fire is general average, but not to the packages which themselves were on fire."¹

Average adjustment.—"Subsequent to the establishment of the act of voluntary sacrifice it is the duty of the

¹ *The Americas*, August, 1919, pp. 29-39.

owners of the vessel to appoint average adjusters,¹ who draw up what is called a general average statement. This lists the disbursements made and the sacrifices incurred and distributes over the different interests involved (*i. e.*, freight, cargo, and ship) the contribution due from each interest."²

It is customary to insure a shipment for the total amount of the invoice plus 10 to 20 per cent. to protect the party insured against loss of forwarding and sundry charges.

Shipper and consignee are equally concerned in the proper insurance of a shipment of cargo, but because the consignee, directly or indirectly, has to pay for the insurance, it is he who usually issues the instructions as to the nature of the insurance which is to be taken out, even if the terms of the invoice are made to read *c. i. f.*

Factors affecting insurance rates.—Insurance rates vary according to the kind of risk and the number of risks against which an insurable interest is to be insured; they vary, in the case of cargo insurance, according to the commodity, the manner in which it is shipped, its destination, the official rating of the vessel by which it is shipped, etc. In the case of hull insurance the classification is of course the most important determining factor, but also the character and the habits of the captain and crew, the reputation of the management, the route of the voyage, etc., are taken into consideration. It was stated by an authority that one marine insurance concern distinguished no less than 900 different factors which enter into the calculations of an insurable risk. An attempt is made to put the estimation of the risk upon a mathematical basis by giving to each factor, affecting the particular case, a certain rating. But as so many of the items which enter into the calculation are not distinctly measurable and extend into the field of psychology,

¹ See Appendix A.

² The Guaranty Trust Co., *Shipping's Share in Foreign Trade*, p. 25.

even the most careful mathematical calculation is bound to be vague in certain respects. That explains why underwriters frequently differ as to the rate which is to be charged for a given risk.

Rate-making in marine insurance differs from other indemnity calculations.—Rate-making in the marine insurance business is far more complex than in other branches of insurance. Because of the large variety of risks, the number of insurable interests, the extent to which the personal element enters, the moral hazard involved, marine insurance in contrast to life and fire insurance operates to only a limited degree upon a scientific basis. There are no fixed marine insurance rates. However, numerous factors lend themselves to an approximate measurement of their importance through statistical tabulation. These are mainly¹: the effect of physical forces on various routes of travel or at different ports; the inherent quality and characteristics of different types of vessels or commodities; the various methods of operating vessels, packing, loading, transhipment and discharge of goods; nationality of the vessel and national characteristics encountered in a given trade; the effects of seasons; the duration of the risk; the effect of trade customs; and the loss experienced under various policy provisions.

The only safeguard of proper estimation of risks is therefore minute scrutiny of past experiences in connection with a like or similar risk, and above all, a careful cost accounting which reveals excessive profits along certain lines and losses along others. Unless an underwriter adjusts his rates accurately on the basis of carefully kept accounts, one of two things is apt to happen. If he fixes his rate too high, a competitor will underbid and take his business; on the other

¹ See S. S. Huebner's *Report*, pp. 62, 63.

and, if he fixes his rates too low, he sustains losses which in the long run would undermine the foundations of his business. Before the war, the normal range of premium percentages under ordinary conditions, without unusual causes, ranged between $\frac{1}{4}$ of 1 per cent to $1\frac{1}{2}$ per cent.

Application for marine insurance.—The following is an application¹ for marine insurance as used by brokers:

MARSH & MCLENNAN
(Marine)
Insurance Brokers
80 Maiden Lane
New York

Date

19

APPLICATION FOR MARINE INSURANCE

Insurance is wanted by
or account of whom it may concern
Loss, if any, payable to

Name of Vessel

Sailing Date

Port and from

To

or \$

Valued at

Conditions:

Rate of Premium %

Rate of Commission %

125740°—20

Binding **MARSH & MCLENNAN (Marine)** for Applicant
Binding Company

Types of insurance policies.—The contract between the insurer and the insured party is known as the insurance

¹ From "Paper Work in Export Trade," Bureau of Foreign and Domestic Commerce, Miscellaneous Series, No. 85.

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value. Many types of insurance policies are used in shipping, but the title may signify the cargo, freight, vessel, vessel and freight, or value of the goods. In the "valued" policy a sum is given, while in the "open" policy no sum is named; it must be determined in the event of loss. The difference between "valued" and "open" policies is that the "valued" policy is issued by the underwriter before he has learned the name of the vessel upon which his goods will be shipped. When the vessel's identity becomes known, its name is added to the underwriter and endorsed on the policy, thus becoming the "named" policy. "Wager," "builder," and "P.I.C." policies are issued when the insurer does not possess "a genuine interest" in the property covered by the contract. Since, however, the law recognizes no policy without a "genuine interest" of the insurer, such policies are not legally enforceable; enforcement depends upon the honor or good faith of the parties involved. Policies may also be divided according to the time during which they protect the insured property. On this basis we distinguish between "voyage" policies and "time" policies. In "voyage" cases property is insured for transit from one port to another or for a certain period.

Insurance Certificates.—Frequent use is made of what are called insurance "certificates." These are issued in order to give merchants prompt protection; they are used in connection with "open" policies which manufacturers or

¹ The letters signify the words policy proof, interest, or that the policy itself serves as the proof of the interest.

units making constant shipments abroad take out for one year or even for longer terms.

They cover all shipments which the insured party may make during that period on any vessel or vessels to any market or markets. Frequently, several types of "open" policies are taken out and when a shipper is ready to ship his goods, he notifies the insurance company that insurance under "open" policy number so-and-so is desired on this shipment; at the same time giving details as to the value of the shipment, the name of the steamer, date of sailing, etc. The certificate of insurance is then returned to the shipper by the company, whereupon it has the force of all the terms of the original policy. The shipper settles his premium, usually, by the month. The "open" policy in this case may be compared to a bank account and the certificate of insurance to a check. The certificate is countersigned by the insurance company and thus becomes quasi-negotiable. On page 398 is found a facsimile of such a certificate of insurance.

Legal intricacies of insurance policies.—In reading marine insurance policy, it should be remembered that the present policy in substance is more than 100 years old. It is therefore a product of a time when transportation conditions were radically different from what they are to-day, and when many terms of the English language conveyed a very different meaning from that which they express now. The result is that no one not thoroughly familiar with the legal interpretation given to various clauses can ascertain the meaning which the language of an insurance policy contains to-day. It is largely for this reason that most marine insurance is placed through brokers who are experts in this particular field and are capable of interpreting the intricacies of this highly technical document to the shipping public. A

CERTIFICATE OF INSURANCE

<p style="text-align: center;">Warranted Safe or Captain, Seaman or Deckhand as per Policy.</p> <p>This policy should not be retained by third unauthorised owner or descendents of original or otherwise, or by devolution, partition or otherwise be transferred to another or used as a copy to the original, and an additional premium paid if required. Any such transferred and against whom the original claim not in any way cover the risk of war, fire and/or civil commotion, or providing the general wording of the policy concerning risks of the insurance business to whom your name particular ownership.</p> <p style="text-align: center;">Assuming risk of credit to usual terms and usual rights and profit for business as it subsequently becomes.</p>	
<p style="text-align: center;">Insurance Company of North America</p> <p>SAMPLE</p> <p>NEW YORK, April 2, 1917</p> <p>This is to Certify, that on the 21st day of April, 1917 the Company named above Policy made for John A. Johnson, Esq., D.D. of Three Islands and Boundary Roads, Bolton St. 22 cases of bullets and 1000 Standard and Non-Standard bullets on board of the British Druillicay, and found safe and sound.</p> <p style="text-align: right;">John T. Clark New York, 1917</p> <p style="text-align: center;">Druillicay </p> <p style="text-align: center;">I-22</p> <p>CIA. Montevideo</p> <p>SAMPLE</p> <p style="text-align: center;">Insurance Company of North America, by their Attorney.</p>	

point which serves as an illustration of the difficulties in interpreting a marine insurance policy is that of a United States automobile manufacturer who had \$700,000 worth of his cars abroad, presumably insured against marine and war risk. When it was too discovered that he could have recovered nothing if had occurred at the most dangerous part of trans-
n. Here are given a few explanations, offered by McMillan Hamilton, President of Hamilton, Wade, some of the more important clauses and terms con-
n a typical marine insurance policy :

IS AND CLAUSES EXPLAINED.—

'A. E. C. CLAUSE:

'of Particular Average English Conditions.
arranted from average unless general, or the ship
ided, sunk, burned, or in collision.'

If vessel be stranded the insurer has to pay particular
without regard to percentage, and whether or not
age is in any way attributable to the stranding.

damage to the goods may have occurred prior to the
ng or after the stranding, and from an entirely dif-
cause, but providing they were on board at the time
ding and the insurance was then in force, the damage
erable from the underwriters.

same applies to burned, sunk, or in collision, but a
which might be on fire is not necessarily interpreted as
nor is a fire confined to cargo covered, and the term
'collision' is interpreted by the courts as if it read
'another vessel,' unless otherwise modified in the
t."

"F. P. A. A. C. CLAUSE:

"Free of Particular Average American Conditions.

"Warranted free from Particular Average unless caused by stranding, sinking, burning or collision."

"This clause differs from the F. P. A. E. C. clause in that the loss must be caused by one of the above-mentioned casualties."

"PER CENT. PARTICULAR AVERAGE CLAUSE:

"Subject to Particular Average if amounting to — per cent."

"The object of this limitation in amount is to prevent an endless amount of small claims which would involve expense of adjustment without due return. It is often modified to divide a single shipment into several units and becomes applicable to each.

"This clause in one of its many modified forms is particularly desirable on most classes of merchandise and machinery as will be seen by reading the preceding paragraphs."

"RIVER PLATE CLAUSE:

"The risk under this policy shall cease upon arrival at any shed (transit or otherwise), store, custom house, or warehouse, or upon the expiry of 10 days subsequent to landing, whichever may first occur.

"This clause is being quite generally insisted on by the companies, particularly on policies to Brazil, Buenos Aires and the River Plate, as owing to the large number and size of shore losses, the marine companies do not care to assume the risk.

"On insurance bearing this clause, consignee or banks

should be advised to see that other insurance is provided in case of lapse before delivery of goods or acceptance of drafts.

"RIOTERS, STRIKERS AND LOCKED-OUT WORKMEN:

"Damage caused by these perils is excluded from the general marine cover and if desired must be included by endorsement.

THIEVES:

"The term 'thieves' does not cover clandestine theft or a theft committed by one of the ship's company, whether crew or passengers.

"SAFELY LANDED:

"Where goods are insured until they are safely landed, they must be landed in the customary manner and within a reasonable time after arrival at the port of discharge, and if they are not so landed the risk ceases.

"IN DUE COURSE OF TRANSIT:

"A policy, although reading 'from warehouse at point of origin to warehouse of consignee at final destination'; also bears the words 'In due course of transit.' These words are not carelessly inserted, they have meaning.

"SEAWORTHINESS ADMITTED:

"A clause is often inserted in a policy admitting the seaworthiness of the vessel for the purpose of the insurance. Where this is attached to a policy, it is a concession on the

part of the underwriter that any leak arising must be from the peril of the sea."¹

¹ *The American*, August, 1919, pp. 39-31.

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PART VII

ORGANIZATION AND MANAGEMENT

CHAPTER XXI

THE HISTORY OF VESSEL OWNERSHIP AND MANAGEMENT

ing trade in mercantilist days.—The highly specialized organization which characterizes the present ship business is the outcome of a long evolution from the simple to the complex. If we disregard the great ventures of ancient times, we might say, that in the earliest beginnings, ocean transportation was rarely private enterprise. Venice, the Republic, not Venetian merchants sent out the "Flanders Flotilla" which was commanded by an Admiral. The Hanseatic League, a political organization, controlled the chief trade with the northern regions of continental Europe.

Gild or town control of medieval times developed into national control in the days of the mercantile companies. Two distinct phases mark this period. Side by side with the adventurers who more often than not had the clandestine support of their rulers, the great chartered companies developed both trade and shipping operations. Accumulation of capital in the hands of the companies and the perfection of the joint stock company as a practicable form of business organization made private enterprise possible in a field where until then the abundance of risk and the scarcity of capital had deterred it from participation. Usually the adventurers blazed the trail for the chartered trading company. Their successors were recognized in the "Free Traders," i.e., the merchant who traded to those sections of the world whose ports were not reserved by royal grant to the larger trading

companies. It is hardly necessary to name the leading chartered companies. The stories of the East India Company (English), the West India Company (Dutch), the Hudson Bay Company, etc., are too fascinating not to be widely known. These companies really performed three functions: they were colonizers, merchants, and carriers. The colonizing function was the first to go—general during the 18th century. The state absorbed it. But trading and shipping remained united considerably longer, and not infrequently the merchant-carrier was his own shipwright.

Free traders vs. chartered companies.—As we stated before, the work of the trading companies was supplemented by the “free traders,” individual merchants who traded with territories not reserved by special grant to chartered companies. They owned and generally commanded the ships in which they carried their wares. The tendency toward restricting the trading monopolies of the chartered companies began early. Thus we read in an interesting History of New York: “A new era began in 1638, when, in response to the protest of the patroons, the States-General directed the West India Company to abolish the monopoly in trade and agriculture, and the right to engage in the fur trade was thrown open to the world. A further step toward greater prosperity of trade was the abolishment in 1645 of the monopoly of the carrying trade between Holland and New Netherland, which the West India Company, with an exception in favor of the privileged patroons, had hitherto enjoyed. The trade was then thrown open to the vessels of private merchants, and the custom regulations adopted concentrated all commerce at Manhattan.”¹

¹ “*Ships and Shipping of Old New York*,” Bank of the Manhattan Company, p. 11.

Smuggling, trafficking and piracy.—Much of the trade carried on by private merchants was of an illegal nature. The artificial restrictions of the mercantilist age invited smuggling, constant warfare courted privateering, and piracy beckoned with large rewards. New York became the center of this kind of shipping venture throughout the world. In the above-mentioned history we read:

"When war broke out in 1688 between France and Spain, and England joined Spain, New York became the principal headquarters for privateersmen and adventurers from all Europe, to whom the name "pirates" might justly be applied. Many of these, in times of peace, sailed under the skull and cross-bones, and for almost fifteen years they not only found New York a safe haven, but greatly enriched her merchants, a number of whom engaged indirectly in piracy through what was called "the Red Sea trade."

"There were two systems by which New York merchants profited by piracy. The most daring was straight piracy with privateering for a cloak. Heavily armed ships would secure from the governor letters of marque entitling them to war upon the king's enemies, and then, when safe at sea, they would seize any ship they met. The safer plan, and that of the more conservative New York merchants, was to fit out an ordinary merchant ship and send it for trade to Madagascar, where the pirates had a fortified rendezvous. These ships in "the Red Sea trade" would leave New York with an oddly assorted cargo of arms, gunpowder, cannonballs, strong spirits, and general sea stores, and trade with the sea-rovers for Eastern stuffs, spices, precious stones, and deep-toned Arabian gold."

Functional division between shipping and trading.—The most interesting question in connection with this evolution is when, how and why merchandizing gradually

separated from ocean carrying. The functional division between the carrier and shipper presupposes a fair degree of safety from pirates, privateers, etc. It needs at least some regularity of communication; it requires a well developed system of branch houses, agencies, etc. We therefore find many reasons why the private carrier was not at an earlier date superseded by the public carrier. First of all, the time consumed in the exchange of correspondence and documents referring to the sale of and payment for merchandise was such as to almost prohibit the development of a public carrying service, whose requisite is found in the sale of the cargo to the foreign consignee before the departure of the vessel. In addition, the present form of consignment shipments is based on an extremely high development of mercantile organization, which was out of the question a century ago. In those days it was only natural that the merchant himself should own and operate the ship and therefore that each vessel should be the trading unit. The small sailing vessel then used could easily be filled by the wares of one enterprising merchant. It was not essential that the merchant should himself conduct the voyage. He might entrust his wealth to a reliable captain or to a "supercargo." International trade consisted largely of luxuries and exotics, and only a few firms dared to enter this adventurous business. Therefore, both the steady flow of merchandise and the multitude of shippers, which characterize the foreign commerce of to-day, were lacking. The need for public carriers did not exist. Finally, the unsettled conditions of the period formed an unsurmountable obstacle to the general establishment of regular trade connections. Semipiratical conditions prevailed on the sea, and foreign navies vied with privateers and pirates in preying upon merchant ships; ordinary commerce was daring adventure.

The origin of berth and charter traffic.—The general

ansition from private to public carrying began during the second half of the 18th century, but does not gain full movement until after the Napoleonic wars, and as far as American Merchant shipping is concerned, until after the War of 1812. The transition was by no means uniform throughout the commercial world. For instance, in Hamburg, according to one source, as late as in the thirties of last century it was the rule for merchants to own their own ships. On the other hand a text-book on business organization of 1792¹ has this to say on the subject: "Under present circumstances, the main incentive for the building of ocean-going vessels is the hope of making a profit by chartering them out or by putting them on the berth, so that I would say that out of every five ships sailing the sea, four are employed in that way." The writer explains this development by commenting upon the diversity of interests of the merchants of his time. They traded in too many different commodities and with too many different localities to be able to keep their own ship permanently and profitably employed.

Timid beginnings of line developments.—There we see the origin of our modern charter and berth traffics. But contrary to general belief, line traffic is at least as old, if not older. The "Börtfahrt" of the early 17th century reveals the existence of public carriers at that time.

The best-known example is the "Börtfahrt" (low-German "Bört"—Dutch "Beurt"—English line, order)² between Hamburg and Amsterdam established as early as 1613. At that time, in this particular trade, commerce and navigation were carried on as two entirely separate functions. Carrier

¹ J. G. Büsch, *Theoretisch-praktische Darstellung der Handlung*, '92 (Part II, p. 6).

² See Dr. Kurt Giese, *Das Seefrachtarifwesen*, (Berlin, 1919, pp. 1ff.). See also E. Baasch, *Die Börtfahrt zwischen Hamburg, Bremen und Holland*. Hamburg 1898.

and shipper were no longer one and the same. The vessel owner's sole source of income was the freight, which was charged on the cargo carried for the account of shipper. The ships as well as the officers and crews engaged in the "Börtfahrt" had to comply with rigid requirements as rules formulated by the interested city governments. In almost all foreign trade in the mercantilist era, also the "Börtfahrt" was promoted by the governments of the city republics concerned, in this case Hamburg and Amsterdam. A treaty between the two cities formed the foundation of the whole venture and its very details were carefully regulated.

The difficulties of maintaining regular sailings and adhering closely to established sailing schedules were considerable in those days when capricious winds provided the sole power of propulsion. For this reason always two sometimes even four vessels were to be in port simultaneously; if there were only two, one which then functioned as "Börtmann" loaded first, and left as soon as its "Börtzeit," i.e., its stipulated time in port was over, the full cargo had been secured. Then the second boat which up to the moment of the "Börtmann's" departure had functioned as "Booglegger,"¹ became the "Börtmann" and another ship came alongside to take its place as "Booglegger." Where four vessels were required to be in port simultaneously, two served as "Börtleute" and two as "Booglegger."

Such "Börtfahrten" were arranged in 1613 between Hamburg and Amsterdam, 1702 between Harlem and Hamburg, 1769 between Hamburg and London. Some time during the 17th century a service was established between Amsterdam and Rouen.

¹ This word simply denotes a vessel lying next to another one.

The bulk of the cargoes carried by these early liners were general cargo piece goods, not bulk commodities. The "Börfahrten" were to some extent hothouse products, being the creation of paternalistic governments, prompted by mercantilistic motives. While they continued throughout the 18th century, they did not grow along with the other trade.

The early "packets."—The development of the modern line traffic does not begin until 1816. From the *History of Old New York Shipping* which was referred to above, we quote the following:

"At the close of the War of 1812 the need of a closer commercial relation with the Old World grew so pressing that some of the more enterprising merchants of New York determined to establish lines of swift-sailing packets between the New and the Old World. Accordingly, there came into existence in 1816 the famous Black Ball Line, the first American packet line between New York and Liverpool. It was founded by Francis and Jeremiah Thompson, Isaac Wright, Benjamin Marshall, and other New York capitalists, among whom the shrewd, far-sighted Quaker element predominated. At first the packets sailed on the first of every month, and later, as the competition of other lines arose, on the sixteenth also.

"The four original Black Ballers were of only four to five hundred tons, but they made the old merchantmen appear very inadequate and commanded the best cargoes. The Red Star Line, established in 1821 and owned by Byrnes, Grimble & Co., the Swallow Tail Line, owned by Fish, Grinnell & Co., afterwards Grinnell, Minturn & Co., entered the field soon after the founding of the Black Ball Line; and by 1822 New York enjoyed weekly packet service to Liverpool and a line to London. Between 1822

and 1832 three lines were established to Havre. Other famous lines were St. George's, E. E. Morgan's London Line, Spofford & Tileston's Liverpool Line and E. K. Collin's Dramatic Line with vessels named the *Sheridan*, *Gerrick*, *Siddons*, etc."

The ownership of these "packets" clearly indicates the separation between trade and shipping which had come about by this time; "Agents, builders, and captains, all were part owners of these packets and speedily grew rich. The agent owned perhaps one-eighth of a vessel; the builder, in order to secure the job of repairing, which averaged \$500 on the round trip, possessed another eighth; another eighth was owned by the captain; and perhaps a sixteenth was owned by the blockmaker and the sailmaker. Competition between the different lines was keen, and the tonnage kept increasing, especially after 1842. In 1854 the *Amazon* and *Palestine*, 1,800 tons each, the largest of the Atlantic sailing packets and the last ships of the Morgan Line, were launched from their ways."

In 1824 the first steamer line service was established by the General Steam Navigation Company between London, Hamburg and Rotterdam. The Royal Mail Steam Packet Company started the first oversea steamer service in 1839, connecting London with the West Indies and Central America. By 1856, line service existed between Europe and all other continents, and by this time established sailing ship companies replaced their sailors by steamers. But until about 1870 liners played only an unimportant part in world shipping.

The history of modern steamship lines.—The table on page 413 shows the most important steamship lines founded during the 19th century, arranged according to the dates of their establishment, by decades.

NINETEENTH CENTURY LINE DEVELOPMENT

	Name of Steamship Company	Year of Establishment	Home Port
1820-1830			
	General Steam Navigation Company.....	1824	London
1831-1840			
	Austrian Lloyd	1836	Trieste
	Royal Mail Steam Packet Company	1839	London
	Cunard Steamship Company	1840	London
	Peninsular and Oriental Steam Navigation Company	1840	London
1841-1850			
	Woermann Line	1847	Hamburg
	Hamburg-American Line	1847	Hamburg
	Pacific Mail Steamship Company	1848	New York
1851-1860			
	Cie des Messageries Maritimes	1851	Paris
	Allan Line	1854	Glasgow
	British India Steam Navigation Company....	1856	London
	Anchor Line	1856	London
	North German Lloyd	1857	Bremen
1861-1870			
	Cie Generale Transatlantique	1861	Paris
	Lamport and Holt, Ltd.	1863	Liverpool
	Alfred, Holt & Co.	1865	Liverpool
	Société Générale de Transports Maritimes à Vapeur	1865	Paris
	White Star Line	1869	Liverpool
	Dominion Line	1870	Liverpool
1871-1880			
	Prince Line	1872	New York
		1872	Rotterdam
	Nippon Yusen Kaisha	1872	Hamburg
	Konglyke Paketvaart Maatschappy	1873	London
	German Levant Line	1873	Paris
	German East African Line	1878	London
1881-1890			
	Munson Line	1881	Bremen
	Holland-American Line	1882	Naples
	Kosmos Line	1883	Newcastle- on-Tyne
	New Zealand Shipping Co.	1885	Tokio
	Cie des Chargeurs Reunis	1888	Amsterdam
	Clan Line	1889	Hamburg
	Hansa Line	1890	Hamburg
	Navigazione Generale Italiana	1890	Hamburg

NINETEENTH CENTURY LINE DEVELOPMENT *(Continued)*

Name of Steamship Company	Year of Establishment	Home Port
1891-1900		
Leyland Line	1892	Liverpool
Shell Transport Company	1898	London
Union Castle Line	1900	London
Elder, Dempster & Co.	1900	London

Development of "berth traffic."—Alongside with the line traffic the berth traffic developed. While it probably is no older than line service, if we included the "Börtfahrt" in it, berth traffic was undoubtedly more important during the 18th and early 19th centuries. That seems only natural. Berth traffic affords almost the same advantages for collecting a ship load as does the line service without imposing the rigidity of a fixed sailing schedule. The traffic in early times was too irregular for line service to be able to exist except in trade routes possessing extraordinary traffic density, financial support from the public treasury or both. It was more common that the boats that were rented or chartered to various shippers were merely "put on the berth." In such a case, a shipowner, with the aid of brokers who were in touch with the merchants, offered his ship for a particular voyage to all who wished to use it.

Sometimes the brokers would take the initiative, and would themselves charter vessels for the purpose of putting them on the berth. While this was the customary method of shipping general merchandise during the time when line traffic had not yet developed, to-day a ship is only occasionally put on the berth. This occurs more frequently at the end of a route, where more freight has been received than is ready to be dispatched. A freighter may also be employed in berth traffic in order to fight exorbitant liner rates.

As the traffic in general merchandise grew in volume and

regularity along definitely established trade routes, berth traffic gave way to regular line service which follows definite schedules. Vice-versa, the organization of line services acted as a strong stimulus to the growth of the exchange of commodities. To-day the liner has almost complete control over the movement of general merchandise, while bulk goods are the domain of the tramp.

The appearance of the "tramp."—The modern tramp owes its existence primarily to the development of world trade in bulk commodities. It is much like the early merchant ship in the method of its operation. The tramps of to-day, as most vessels of the 17th and 18th centuries, go wherever they please; that is to say, wherever the hope of profitable trading opportunity beckons. But apart from size and methods of propulsion, there are these big differences between the modern tramp and its 18th century prototype. The tramp usually carries bulk commodities which move in cargo lots. The 18th century sailer carried general cargo. The tramp is invariably chartered out. The early vessel, as we have seen, more often than not was not chartered out, but employed to carry the merchandise of its owner. There was also a marked difference between the 18th century charter traffic and the modern tramp service. The early charter business used the trip charter almost exclusively. To-day, when the introduction of steam power has practically emancipated shipping from the uncertainty of weather conditions, the time charter has become more common.

The revival of the private carrier.—An interesting phase of the latest development of vessel ownership is the revival of the private carrier. The main reason for this modern tendency is to be found in the magnitude of modern corporations. This has made possible the handling by one

concern of such vast quantities of coal, iron, petroleum, asphalt, fruits and other products that the use of steamship lines as part of a single business has become economical.

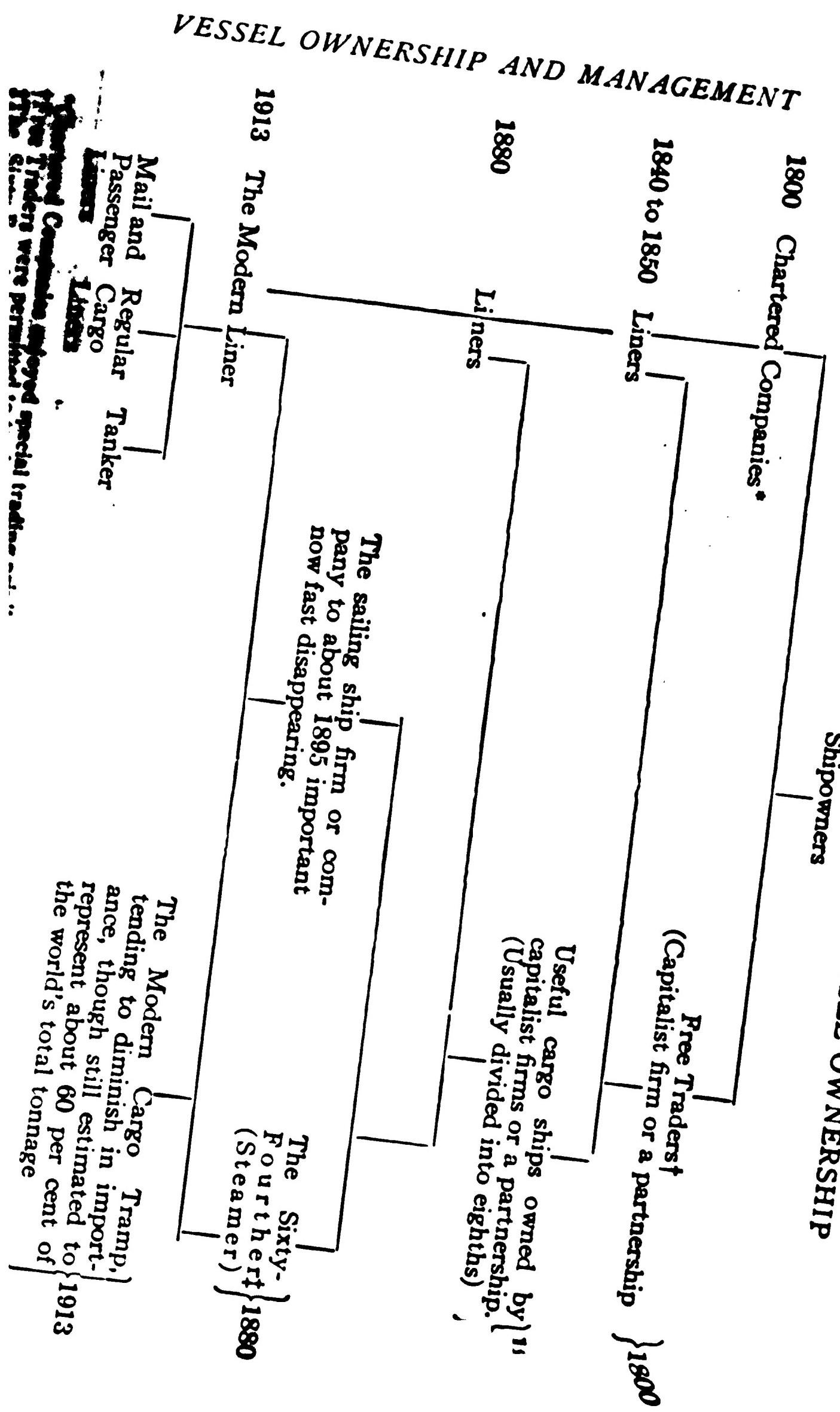
To understand this development we must ascertain why the services of either the modern liner or the modern tramp are insufficient to satisfy the requirements of twentieth century shippers. It is true that the modern liner takes large quantities of bulk commodities, but this portion of the business is looked upon as a by-product.

The bulk goods serve to fill the space left vacant by the better paying general merchandise. It, therefore, follows that if commodities, such as steel rails and the like, move in directions where general cargo cannot be obtained, it does not pay to establish a public line. The regularity and the volume of these movements, however, sometimes necessitate the establishment of regular sailings for the private corporation. The result is the private line.

Another reason for the establishment of private lines may be found in the necessity for providing vessels built especially to meet the requirements of a particular trade. In either case, the same factors that favor the development of large-scale production and the consolidation of enterprises along horizontal as well as vertical lines, are also applicable to these cases of absorption of the water-transportation service by the manufacturing or producing corporation.

Summary of evolution.—The evolution just sketched is summed up in the following diagram, which we reproduce from Kirkaldy's *British Shipping*, p. 167:

SHIPOWNERSHIP



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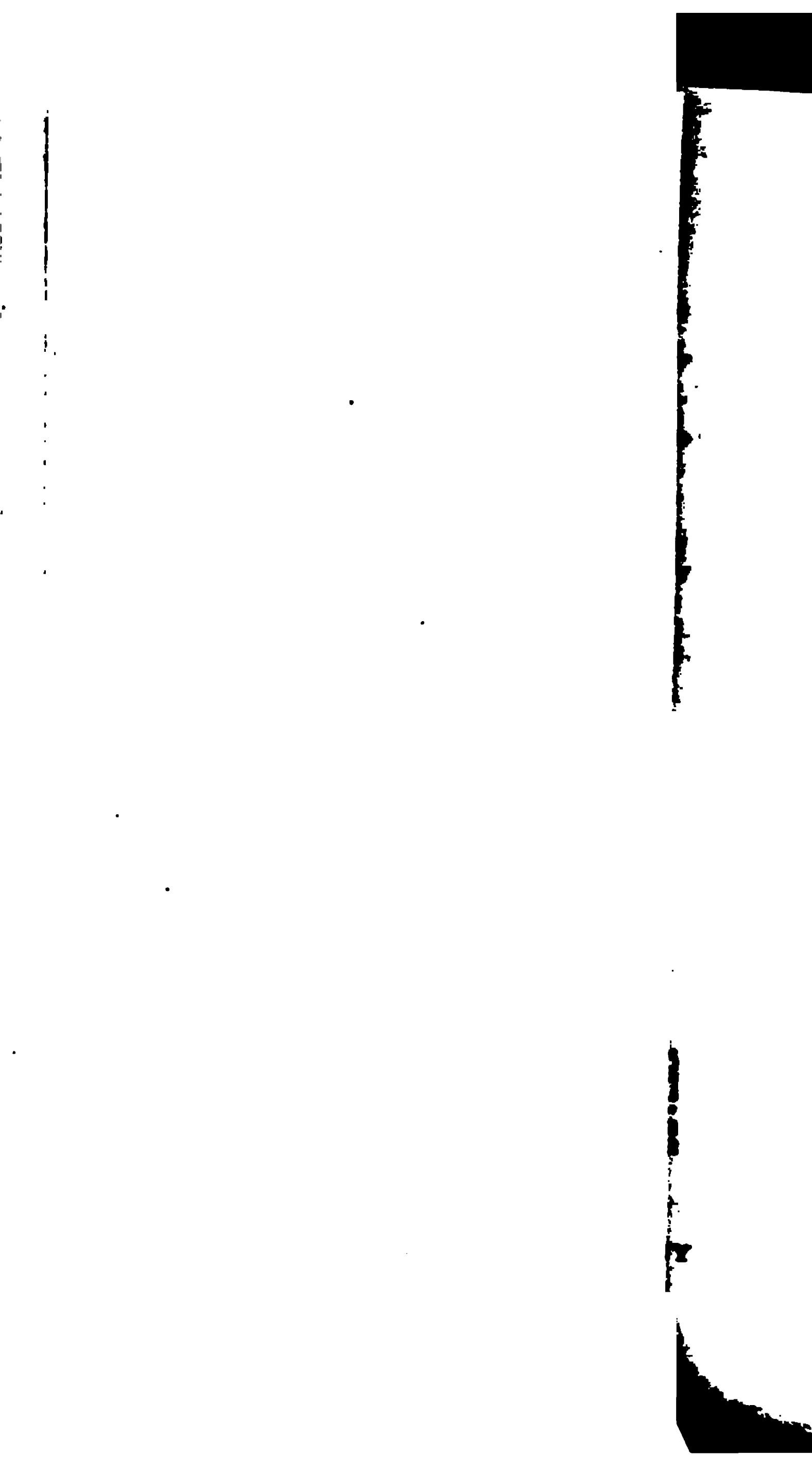
ANSWER

ANSWER: *the answer to a question or problem*

ANSWER: *a reply to a question or comment*

ANSWER: *the solution to a problem*

ANSWER: *the response to a question or query*



CHAPTER XXII

THE ORGANIZATION OF THE STEAMSHIP BUSINESS

Three types of steamship organizations.—Business organization is not standardized. Each company has its own problems to solve and tasks to perform and adapts its organization to its peculiar needs. Nevertheless, a type can be evolved which includes the characteristic features of the individual organizations. But in view of what we have discussed in previous chapters, it is clear that one type will not suffice to represent all the various forms under which shipping services are performed. There must be at least one type for line service rendered by common carriers, another for private or industrial lines,¹ and a third for tramps.

Liner organization.—Let us take up the liner organization first. Each group of liners naturally operates under a different form of organization, but by choosing the most complete and complex type we cover at the same time the simpler forms contained therein. The following chart, showing the typical organization of a large passenger and freight steamship company, was prepared by Dr. R. S. MacElwee for a bulletin entitled *Training for the Steamship Business*.²

General features not unusual.—As far as the general form of organization is concerned, a steamship company does not differ essentially from corporate organizations in

¹ The organization of private or industrial lines follows in principle that of other liner companies and requires no separate discussion.

² R. S. MacElwee, *Training for the Steamship Business*, Department of Commerce, Bureau of Foreign and Domestic Commerce, Miscellaneous Series, No. 98, Washington, 1920.

other lines of business. Stockholders elect directors, who in turn appoint the officers, such as President, Vice-President, Secretary, Treasurer and Controller. The peculiarity of the steamship business is brought out only when we study the detailed organization of the various departments which are in charge of the several managers, such as Passenger Traffic Manager, Freight Traffic Manager, Insurance Manager and Manager of Operations.

The manager of operations and his department.—From our chart it appears that the Manager of Operations controls the largest department of the organization. His division comprises two distinct groups of people; those who are employed on shore and those whose duties are performed on board ship. Naturally, this distinction does not affect every one of the eight departments which make up the Division of Operations, but it affects the marine, the engineering, and the victualling departments, which have probably the largest number of employees in the Division of operations.

The traffic man.—The second largest department is in charge of the Freight Traffic Manager, and performs such commercial or traffic functions as relate to the carrying of the cargo.

"It has charge of the making of freight rates; of the issue and distribution of tariffs or rate cards or instructions as to what charges are in effect; of the solicitation and development of freight traffic and the booking of cargoes; the issue of freight contracts, bills of lading, parcel receipts, shipping permits, arrival notices and other shipping documents; and of the entry and clearance of vessels and to some extent of cargoes at the customs house. It selects cargo so as to swell the profits of each voyage as far as possible, and considers the relative space to be occupied by cargo and fuel. It recommends the establishment of new or the alteration of

old services; it examines into the traffic suitability of vessels which the owner contemplates purchasing, chartering or constructing."¹

Such an array of duties require exceptional men. Mr. Robert E. Annin, himself a practical steamship man, writes as follows about the traffic manager:²

"His position is at the strategic center of the business and his functions are of vital importance. His must be the broadest training of any department head.

"The delivery of cargo in proper rotation; the issue of permits; the daily adjustments of the ever-shifting, but vital, relation of the coming cargo to what is already stowed; the keeping a firm hand on the dock; the tactful treatment of the shipper, the stevedore, and the "boss" of the office (who casually promises all sorts of traffic impossibilities to his midweek golf partners); the constant watching of the changes in the relation of weight, measurement, capacity, draft, and gross revenue; the straightening out of dock quarrels over measurements or tallies; the watching of lighters so as to avoid demurrage—these are all more or less directly put up to the traffic manager whenever they become acute."

He must know ships—types as well as the peculiarities of individual ships. He must be able to read statistics. He must know traffic and traffic conditions, routes and rates; he must know cargo of every character and description, and know it accurately. He must be able to interpret the trend of the freight market. In short, his knowledge may fall but little short of omniscience. To quote Mr. Annin once more:

"He and his department are the heart and the lungs of the business. Fully 80 per cent of the vital work is to be performed or supervised by it. Here is the place whence the revenue comes.

¹ Grover G. Huebner, *Ocean Steamship Traffic Management*, p. 18.

² R. E. Annin, *Ocean Shipping*, p. 135.

Other departments accomplish, regulate and check up the expenditure; but the traffic department is where the money-making is engineered."

Organization of the traffic department.—It appears that this department falls into three main sections; one section in charge of a First Assistant Freight Traffic Manager, which solicits and handles outgoing freight; another which performs the same service for inbound freight, in charge of a Second Assistant Freight Traffic Manager; a third section is directly under the supervision of the Freight Traffic Manager and performs either special functions, such as establishing a connection with the Produce Exchange, or else supervises the clerical and soliciting staff in branch offices or agencies in the home country or abroad. All these sections have clerical divisions whose main work is the handling of the numerous documents used in the freight-carrying business.

Passenger traffic department.—The chart shows the organization of the Passenger Traffic Department of a typical North Atlantic passenger line.

In this case the duties are divided in such a way that the Passenger Traffic Manager, who is the head of this department, besides generally supervising the entire department and deciding on its general policies, has direct charge of the cabin service, that is to say, of the passenger business exclusive of steerage or third class. Perhaps the most responsible task to be performed by the Passenger Traffic Manager is that of fixing passenger fares, just as freight rate-making is the most important function of the General Freight Traffic Manager. Inasmuch as rates and fares, as we shall see in a later chapter, are nowadays largely fixed by conferences between various lines, the traffic manager has to participate in conference meetings where the rate

and fare changes are agreed upon. In many cases, conferences fix only the minimum rate to be charged and leave much to the discretion of the Traffic Manager.

The organization of the tramp business.—We now come to the study of ship brokerage and of the organization and administration of chartered vessels. We have seen that even to-day, in this age of specialization and increasing regularity, tramps or chartered vessels perform the major part of the world's seaborne business. The ingenious solution of the great world puzzle of bringing together more than twenty-four thousand tramp vessels scattered over all oceans, enroute to hundreds of ports in all climes, with the freight equally scattered, is admirably described by Prof. J. R. Smith¹ in the following way:

"The method of securing cargoes for ships, and ships for cargoes, is best described by the relation of some common incidents of everyday occurrence. A Liverpool shipowner had a steamer in the Mediterranean loaded with jute, which she was carrying from Calcutta to Dundee. The owner desired another cargo for the steamer at the end of the voyage. Knowing there was nothing in Dundee he wrote to his agent in Newcastle, and himself made inquiries among the shippers of Liverpool. The Newcastle man suggested a cargo of coal to Hamburg, but this the owner declined, and sought the aid of his correspondent in Dumbarton, but the iron trade of Dumbarton was not promising. Meanwhile, the days were passing, the vessel had reached Dundee and there was nothing provided for her. The Liverpool man was himself the correspondent of a London firm of ship-brokers who telegraphed him at this juncture that they had offers of a shipment of German coke to go from Rotterdam to Santa Rosalie, lower California, and of another of Cardiff coal for Buenos Aires. The first the shipowner declined as being only suitable for a sailing vessel, and because of news from across the Atlantic he allowed the second to go to a steamer then lying at Antwerp. Three

¹ See J. R. Smith's "The Ocean Carrier," pp. 36, 37.

days before this he had cabled to his New York correspondent a description of the steamer, and offered his services to carry grain to the United Kingdom at a certain rate, saying that she could load after a certain date or between certain dates. As New York freight was dull, the firm in that city telephoned their Boston and Philadelphia agencies. At the same time a Chicago grain exporter decided to export 150,000 bushels of corn, and telegraphed to his agents in New York and Philadelphia to secure offers of transportation. In the shipping exchanges of those cities the representatives of the Chicago exporter and the Liverpool shipowner bargained face to face. Offers were, however made at the same rate by the New York representative of the owner of a ship then off Rio Janeiro with a cargo of Chilean nitrate bound for New York, and also by a Philadelphia broker who sought future employment for a vessel then in the Red Sea with a cargo of Java sugar for Philadelphia. The wary broker held aloof for a few hours in the effort to beat down the rate. The Liverpool owner was informed of this competition, and still having nothing for his steamer he cabled that he would charter his ship for threepence (six cents less per ton than he had offered, or for the same rate he would take freight to Continental ports as far as Copenhagen. He added to his cablegram the word "range," which means in cable code that he would send the ship to the Delaware Bay with the understanding that she might be ordered to New York, Philadelphia, Baltimore, or Norfolk to load. This offer secured the freight, for the representatives of the sugar ship and the nitrate ship, having more time at their disposal, preferred to take chances rather than cut rates. The steamer which, pending negotiations, had proceeded to Newcastle, coaled and anchored, departed thence in ballast for the Delaware. Meanwhile, the Chicago exporter found that railroad conditions made Norfolk the most convenient port to which to deliver his corn at the appointed time. When the steamer reached the Delaware breakwater (just inside Cape Henlopen), the captain received telegraphic instructions to go to Norfolk. There he loaded a full cargo of corn and, as the final destination of the corn was still undecided, he sailed to the Channel port of Falmouth for orders. Upon being sighted there, he was instructed by signal to proceed to Copenhagen, where the corn was discharged and the vessel was ready for another contract which the agents had been trying to arrange since the day they learned of the final destination of the corn cargo."

Organization of the charter market.—Until the war the world charter market had its center in a few ports near the North Sea basin. Here, in close vicinity, located in the great European ports, such as Le Havre and Liverpool, were the dominions of the great shipping companies of the world. Great Britain and northwestern Europe attract countless tramps which either seek this section of the world as the destination of their cargo or as the source of an outward cargo. The latter is hardly ever lacking because of the endless stream of British coal which flows to almost every corner of the globe.

It is, therefore, not surprising that the entire charter trade directed from central points located in this part of the world; particularly in London, Hamburg and Rotterdam, tramps which come to New York, for instance, do not ordinarily make their engagements here, but are chartered in one of these great charter markets of Europe. The centralization of the charter market of the world in a relatively small area is rendered possible by the development of all means of communication, particularly the cable and wireless. The net of international cables and of wireless plants, forms the basis of the organization of the modern charter market, bringing a multitude of local establishments into the great international organization.

This system of telegraphic communication has been greatly improved through the invention of wireless telegraphy. It was stated in a previous chapter that this invention has materially added to safety at sea. In some respects its effect upon the operation of tramps, indirectly upon the speculation in, and the marketing of, many of the commodities carried by tramps is apt to be even more far-reaching. The number of tramps equipped with wireless is constantly increasing. Through it the charterer or his agent is kept

practically in constant touch with his ship. As a result of this, the moment when the final destination of the cargo is to be determined is postponed still further. But this is only one of the manifold effects on the charter business. It would lead us too far to make an exhaustive analysis of all such results.

Negotiating a charter.—The fact that negotiations between shippers and shipowners' representatives are conducted in so-called exchanges, should not lead to the belief that tonnage has in any way become negotiable and can, therefore be traded in generic terms without reference to a particular vessel. It is true that phrases such as "handy vessel" or "moderate-sized vessel" are found in charter parties, but they are invariably supplemented by particulars naming a specific vessel. The basis of negotiability is standardization, and the considerable progress that has been made in standardizing charters and in developing standard types of vessels has brought it within easy reach of a negotiable point.

In view of the complex nature of the charter party, it is not surprising to find that almost all charter parties are carried out through the office of a broker. The merchant or manufacturer who wishes to charter a vessel has no way of gauging the supply and demand of vessel tonnage. Here the middleman is indispensable. The brokers, being in constant touch with each other, as well as with shippers and shipowners, are in a position to exercise a steady and equalizing influence upon the formation of charter rates by publishing market conditions in private reports and in such papers as *Lloyd's List*, the *Shipping Gazette*, *Fairplay* and others. In some cases the broker has authority to act as agent for shipper or shipowner. He is seldom a shipowner himself. To sum up, we may say that there are altogether five persons or classes of persons interested in a charter.

First, the shipper; second, the forwarding agent; third, the agent of the ship in the port of loading; fourth, the ship's agent in its home port; and fifth, the owner or owners of the vessel.

Methods of tramp operation.—The tramp is operated in a number of ways. In the first place it may be owned by the master, who then has full charge of the operation of the vessel, combining the commercial with the nautical function. A similar case is that in which the master is part owner, and the holder of the remaining share leaves the master a free hand in operating the vessel. Again, the owner may entrust the management of his tramp or tramps to ship brokers, who are found in almost all ports of the world, relying on them to keep his property plying the seas regularly and remunerately as possible. If the owner is anxious to reduce the risk involved in the operation of his ships to a minimum, and is content with a correspondingly low return on his investments, he may time charter his vessels for a number of years to operators, who then recharter them, usually on trip charter but sometimes on time charter and always at higher rates.

In England, the country which is, as we have seen, prominent in tramp owning, so-called "managing owners," who operate fleets of tramps ranging from half a dozen to more than one hundred, are not uncommon. These managing owners usually own a number of vessels themselves, but more often manage ships belonging to others, in which case they pay the owner a stipulated percentage of the profits of the business.

General steamship agents.—Still another way of conducting this part of the shipping business is through the General Steamship Operators or Agents. They may be concerns of considerable size, combining a large variety of

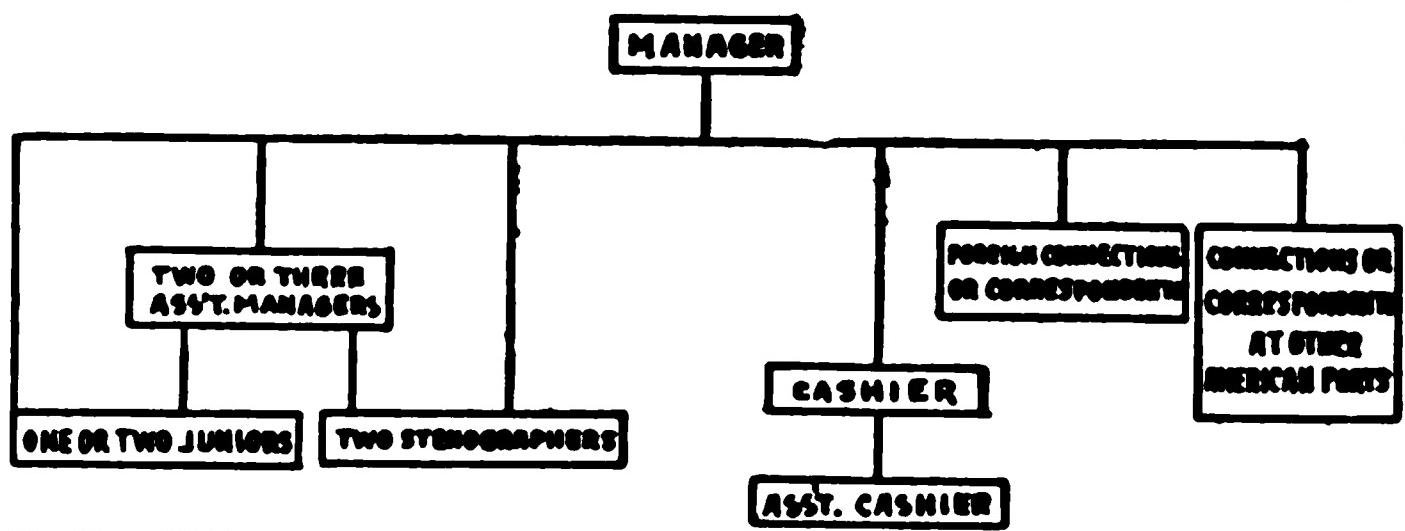
functions. They may act as agents for regular line companies, organize and operate one or more lines made up of vessels which they own or charter to a general ship brokerage business; act as ocean freight forwarders; handle marine insurance; hold the license of a customs house broker and manage fleets of tramp vessels. In some cases these concerns operate as commission houses and merchants. By combining so many functions the risk of the business is frequently reduced. We may even mention a "hedging" operation where such a concern does not charter its vessels until time contracts have been made with large shippers of sugar or other staple commodities, whereby the necessary cargo is assured.

Ship brokerage.—This enumeration of types of tramp operators and managers does not sufficiently show the significant part which the ship broker plays in the chartering business. Ship brokers are indispensable for the small tramp owner and operator and are useful also to the larger tramp operators, managing owners and general steamship operators, though the latter are less dependent upon them.

The broker's business is to establish the contact between supply and demand, which means in the case of the ship broker between owner and charterer. The owner or his representative seeks cargoes and the shipper or charterer seeks space. But besides this main work, the ship broker sometimes is instrumental in loading, discharging and operating chartered vessels. The ship broker is again called upon when a tramp owner or operator desires to put the vessel "on the berth." Here the ship broker becomes a steamship agent; he advertises the voyage, sends notices to shippers who are likely to ship in the vessel; he makes the necessary docking arrangements, books freight, arranges for

the receipt and loading of cargoes, etc. The following chart shows a typical business organization of a large ship broker:

TYPICAL BUSINESS ORGANIZATION OF A LARGE SHIP BROKER



Courtesy D. Appleton & Co.

From G. G. Heubner "Ocean Steamship Traffic Management."

Former functions of supercargoes.—During the war, the supercargo official of the steamship organization, who, to all intents, had become an obsolete type, or super-numerary, experienced a revival. Before the days of cable and wireless this traveling representative or business agent afloat had been indispensable. Improved means of communication more and more reduced his usefulness, until competition, which does not suffer superfluous branches in a business organization, led to the almost complete disappearance of the supercargo.

But the war, by calling forth in a day, as it were, an American merchant marine of hundreds of vessels, in more than one way created a new condition of affairs. It placed an enormous tonnage in the hands of a people who were somewhat unaccustomed to and unprepared for the task of operating such a large fleet of carriers to best advantage. The supercargo was restored to help in this emergency. The

man instrumental in placing supercargoes on many of the new freight vessels was Mr. J. H. Rossetter, at one time Director of Operations of the United States Shipping Board. His argument was this:¹

The line, so to speak, of Americans experienced in operation and with facilities in foreign countries is altogether too thin. It will not stand the strain. Strands have to be added. We have to very considerably increase the comparatively small group of Americans who understand or are interested in foreign commerce. We have to expand our experience and our understanding of international problems. As a Nation we are absolutely childlike in our viewpoint of these problems. We can not do that overnight. The effort must be encouraged and stimulated.

This much mooted question of supercargoes, which has subjected me at different times to vigorous attacks, had its inception in the theory that it would accomplish the training of young men. It might not be amiss to say when I called that first class of supercargoes together I saw as fine a body of young men as it has been my pleasure to meet for a long while. I was supposed to give them a little talk as to what their course would be, and as I talked to them it occurred to me that it might be well to give them an offhand examination. So I asked these young men, college graduates, men from banks, and all walks of life, fine types, such questions as the distance from New York to the Panama Canal, the relative distance from San Francisco to the Panama Canal, in which direction the Panama Canal took its course, and to give me the names of five principal seaports of the world.

The outcome of the test was such as to prove to Mr. Rossetter the absolute necessity of organized scientific training of the youth of the land along shipping lines, both by theoretical instruction and in the school of life.

Duties of supercargoes on Shipping Board vessels.— The duties of the supercargo were fully explained in Bulletin

¹ See Hearings on Establishment of an American Merchant Marine, pp. 1965, 1966.

828 of the Information Bureau of the Shipping Board. quote the following:

The supercargo is first expected to acquaint himself with the organization and history of the United States Shipping Board and general duties of a supercargo as they relate to a ship and its cargo. Then he is taught enough about marine insurance to learn the part it bears upon the profitable operation of ships. After this he must learn what is expected of him in observation and reporting upon other matters. Voyage logs, port logs and history of foreign transportation must be mastered in detail, together with a full knowledge of charters, bills of lading, manifests and other routine papers aboard ship. The whole course of training is intended to develop the faculties of observation and perception in the student; unless he shows encouraging response in these lines, his chances of entering the service have touched the vanishing point.

Once aboard ship the supercargo must still prove himself worthy of the important position for which he is training. He must show himself tactful, both in his relations with the officers and crew of the vessel to which he is attached and with the officers and workmen at the ports and harbors where his vessel may touch. He is expected to make a report embracing practically everything of interest that happens, at sea, in port and ashore until his vessel is again tied up in its home port.

The supercargo of to-day will perform the same duties under the advantage of direct telegraphic wireless and cable contact with the operators. He also will act in conjunction with the captain of the ship in berthing the ship in foreign ports, in bunkering the ship and in all business pertaining to the operation of the ship with the object of reducing to a minimum the overhead charges. The consequent effect of such economies through efficient management upon freight rates will do much in keeping our shipping upon the seas."

Reasons for failure.—However, the new institution could not resist very long the same tendency to change which characterized the other activities of shipping during the period of transition from war to peace times. When Chairman Payne succeeded Mr. Hurley, he practically abolished

the supercargo. His main reason was the constant friction between supercargo and master arising out of conflicting authority. Theoretically the supercargo was subject to the master's authority in all matters regarding the safety of ship and cargo. But beyond that, the line was not distinctly drawn. When asked by Senator Fletcher on March 10, 1920, what he intended to do about the supercargo, Chairman Payne said:

Mr. PAYNE. Let me say just a word about the supercargo. Of course, in August we had supercargoes on practically all of the ships. Constant controversies arose between the captain or master and the supercargo, and the division of responsibility seemed to me to paralyze both. If the captain is efficient and competent, you do not need a supercargo. If he is not efficient and competent, he is in command of the ship, and unless the supercargo is an exceptional person, he does not do much good. The greatest difficulty was, in my judgment, however, that the fact that you put a supercargo on a ship creates in the mind of the captain or master the impression that we are suspicious of him, and that instead of representing the Shipping Board, who employs him and pays him his salary, he represents the operators, and there is a conflict between the operators' side as represented by the captain and our side as represented by the supercargo. So that, with such an investigation as we gave to the subject, I think most of them concluded that wherever we could have a European agency, as a representative in the port, to take care of the port conditions, it was much wiser than to have a supercargo.¹

The main function of the supercargo in war time was to assure despatch. Normal times will render this task less difficult. As to the training of American youth, other methods may be found.

¹ Hearings for the Establishment of an American Merchant Marine, pp. 1885f.

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CHAPTER XXIII

CONCENTRATION AND COMBINATION

Aim of combination.—Ever since 1850, more particularly since 1870, a constant movement towards larger units of control has marked the evolution of the steamship business. This tendency has been particularly pronounced since the beginning of this century. A trend towards concentration is found not only in shipping but in most business activities. The aim is, invariably, increased profitableness, which is achieved in three ways: through an increased price or charge for commodities sold or services rendered; through a reduction of cost per unit produced; or through a lessening of the risk entailed. Most combinations serve one of these purposes, some more than one, and a few all

Forces driving shipping to greater concentration.—As far as shipping is concerned, the causes underlying the movement towards concentration have largely to do with the increasing financial risk of the shipping business. The ship itself has grown costlier, competition more severe and the demands made by the shipper more exacting. All this is true much more of the liner than of the tramp. The tramp, not being bound to a given route, is not exposed to the vicissitudes that depressions, panics, crop failures, etc., bring to the liner. The latter has to stay in the service, unless goodwill, painstakingly built up by years of effort, is to be sacrificed. Rigidity, in other words, means increased risk, which is the greater if the field served by a given line is by nature of circumstances not a very lucrative one.

Growth of the single line.—The simplest form of concentration is represented by the expansion of the individual line. This may be achieved either by putting earnings into

additional ships or by increasing the outstanding capital, represented either by stocks and bonds, or indirectly, by absorbing other companies, or simply acquiring their assets. If company A absorbs company B we call it a merger; but if companies A and B form a new company, C, we apply the term amalgamation. In the following tables we give the names of the leading steamship companies together with the number of ships, and the aggregate gross tonnage.

Table 1.—British merchant fleets of over 100,000 tons gross:

Line	January 1, 1920		
	No. of Vessels	Gross Tonnage	Average Size
Furness Line (including Prince Line).....	197	924,581	4,693
British India	163	823,860	5,054
Alfred Holt and Co	81	567,610	7,007
Ellerman Lines, Ltd. (including Bucknall's).....	107	564,630	5,277
P & O Company	63	554,013	8,600
Elder Dempster and Co., Limited.....	94	427,941	4,552
Cunard Line	24	398,672	11,725
White Star Line	29	390,727	13,473
Unson-Castle Line	52	382,178	7,340
The Royal Mail Steam Packet Company.....	54	353,621	6,548
Latport and Holt, Limited	52	328,294	6,194
Clan Line	60	320,377	5,339
Eagle Oil Transport Company, Limited.....	32	282,000	8,810
Anglo-Saxon Petroleum Company, Limited.....	55	281,202	5,513
T & J. Harrison	48	266,647	5,558
Commonwealth and Dominion Line, Limited.....	29	222,944	7,687
Leyland Line	85	219,567	6,273
Canadian Pacific Ocean Services, Ltd.....	21	216,999	10,333
Pacific Steam Navigation Company.....	25	216,020	8,172
Shaw Savill and Albion Company.....	21	205,374	9,779
Hain Steamship Company, Limited.....	42	197,448	4,701
City Line	27	189,041	7,001
Federal Steam Navigation Company.....	19	183,780	9,671
Andrew Weir and Co.....	20	162,813	5,614
Ellerman's Wilson Line, Limited.....	50	162,187	2,740
Brocklebank, Thos. and Jno., Ltd.	24	161,571	6,723
Anchor Line	19	160,953	8,471
Houlder Line	20	155,705	5,223
Atlantic Transport Line	18	155,334	8,630
Anglo-American Oil Company, Limited.....	30	137,503	4,586
Donaldson Bros., Limited.....	24	137,157	5,715
W. R. Smith and Sons (St. Just Steamship Co., Ltd.)	22	134,068	6,094
New Zealand Shipping Company.....	14	127,078	9,077
China Navigation Company, Limited.....	64	122,318	1,911
Blue Star Line, Limited	17	104,842	6,167
The Western Counties Shipping Co., Ltd.	17	105,635	6,214
Allan Line	10	103,829	10,383

Courtesy of *The Suez and Shipping*

Table 2.—American merchant fleets of over 100,000 tons deadweight, January 1, 1920 (showing both owned and allocated vessel tonnage).

Company	Home Port	Ships Owned		Allocated Ships		Total	
		No.	D.w. Tons	No.	D.w. Tons	No.	D.w. Tons
Standard Oil Co. of New Jersey	New York	51	456,025	1	9,030	52	465,055
Pacific Steamship Co.	Seattle, Wash.	18	42,323	50	344,664	58	386,987
American Line	New York	6	47,346	36	326,435	42	372,782
Barber Steamship Lines	New York	4	27,527	36	279,844	40	307,371
Munson Steamship Lines	New York	12	64,929	44	238,370	56	303,308
Luckenbach Steamship Co.	New York	14	170,225	17	121,645	31	292,000
Atlantic Transport Co. of W Va.	New York	4	53,175	19	182,724	23	245,999
W. R. Grace & Co.	New York	19	106,413	24	127,068	43	233,581
Struthers & Dixon	San Fran., Cal.	...	.....	"31	"231,188	"31	"231,188
New York & Cuba Mail S.S. Co.	New York	12	53,208	37	173,495	49	236,703
J. H. W. Steele & Co.	Texas	...	...	28	212,130	28	212,130
A. H. Bull & Co.	New York	14	66,958	28	136,867	42	203,825
Strachan Shipping Co.	Savannah, Ga.	...	.....	25	197,441	26	197,441
American Hawaiian S. S. Co.	New York, ...	16	173,779	3	221,000	19	195,579
Metropolitan Shipping Co.	New York	...	...	25	193,358	25	193,358
Kerr Navigation Co.	New York, ...	9	71,623	18	114,895	27	190,518
Walker & Daly	New York	...	.....	20	174,807	20	174,807
Red Star Line	New York	...	.....	18	169,158	18	169,158
Pacific Mail	San Fran., Cal.	12	45,550	15	110,777	28	156,327
Pan American Petroleum & Transportation Co.	New York	17	141,888	1	12,775	18	154,663
Matson Navigation Co.	San Fran., Cal.	7	60,200	17	73,851	24	134,051
Texas Co.	New York	11	68,880	7	64,370	18	133,230
Coastwise Transportation Co.	Boston, Mass.	10	71,300	16	60,029	26	131,329
Texas Transport & Terminal Co.	New York, ...	...	.....	23	127,713	23	127,713
International Freight Corp.	New York	...	...	20	127,106	20	127,106
United Fruit Co.	Boston, Mass.	22	96,190	8	27,883	30	134,073
Oriental Navigation Co.	New York	1	1,400	15	110,897	10	121,297
Southern Pacific Co.	New York	24	120,450	15	116,998	24	120,456
Willard, Diamond & Co.	San Fran., Cal.	...	...	14	116,998	14	116,998
Flewell & Co.	New York, ...	5	187,000	16	96,341	21	113,041
Columbia Pacific Shipping Co.	Portland, Ore.	...	...	21	114,232	21	114,232
Crowell & Threlow	Boston, Mass.	8	53,000	16	60,535	24	113,535
Lykes Bros.	Gulfport, Tex.	...	...	22	112,615	22	112,615
McCormick Steamship Co.	New York	12	43,504	15	68,200	27	111,703
Robert Hasker & Co.	New York	...	...	21	108,424	21	108,424
M. H. Tracy & Co.	New York	...	...	19	107,973	19	107,973
Harry Mall & Co.	New York	...	...	17	104,484	17	104,484
Panama Railroad Co.	New York	12	96,852	2	7,168	14	104,000

* Including 7 sailers of 20,350 d.w. tons.

Courtesy of *Nautical Gazette*.

Table 3:—The tonnage of the four leading Japanese steamship companies is stated by the Japanese Ministry of Communication to be as follows:

	March 31, 1920	
	Vessels	Tonnage (Gross)
Nippon Yusen Kaisha.....	97	462,185
Osaka Shosen Kaisha.....	79	318,603
Kokusai Kisen Kaisha.....	53	284,676
Toyo Kisen Kaisha.....	10	90,199

Table 4:—The tonnage of the three leading French steamship companies, according to the 1920-21 edition of *Lloyd's Register* are as follows:

	Number of Vessels	Tonnage (Gross)
Compagnie Générale Transatlantique.....	87	396,419
Messageries Maritimes.....	45	245,610
Chargeurs Réunis.....	34	192,179

The "Portmanteau Company."—The additional ships may be used either to improve one established service or to add a new route or line to the old one. If the latter course is pursued, the "portmanteau" line is the result. A good example of such a "portmanteau" organization is the Cunard Line. Scores of services radiate not only from Liverpool and other United Kingdom ports to many parts of the globe, but even feeder lines are kept up in foreign countries and in distant continents. One board of directors in the name of a single firm controls the world-wide network of lines and services wherever expediency and foreign laws permit this method. The advantages sought by such methods are primarily reduction of overhead expenses and diminution of risk through distribution over as wide a field of endeavor as possible. This is achieved by lessening the effect of local depression and taking the fullest possible

advantage of prosperity waves in other parts. This is simply an illustration of the business adage: "the broader the base the smaller the risk."

The following advertisement of sailings illustrates the spread of risk:

FURNESS, WITHY & CO., LTD.

Steamship Owners, Brokers and Agents

Regular Services From

Montreal, St. John, N. B., Halifax, N. S.,
St. John's, N. F., New York, Portland, Bos-
ton, Philadelphia, Baltimore, Newport News
and Norfolk.

To London, Liverpool, Glasgow, Manchester,
Cardiff, Hull, Leith, Aberdeen and Dundee

ALSO AGENTS FOR

Prince Line

Cargo Services to Brazil, River Plate, South
and East Africa, also to the Far East. Sail-
ings on application.

Furness-Prince Line

Levant Service—Piraeus, Alexandria, etc.

Furness-Prince Line

United States—France Service to Havre

Furness Line, Cardiff, Leith and Dundee

Regular Sailings from New York

Furness Bermuda Line

from New York

ALSO AGENTS FOR

Swedish American Line and

Transatlantic S. S. Co. Joint Service

Passenger and Fast Freight Services to
Gothenburg, Finland & Russian Baltic Ports

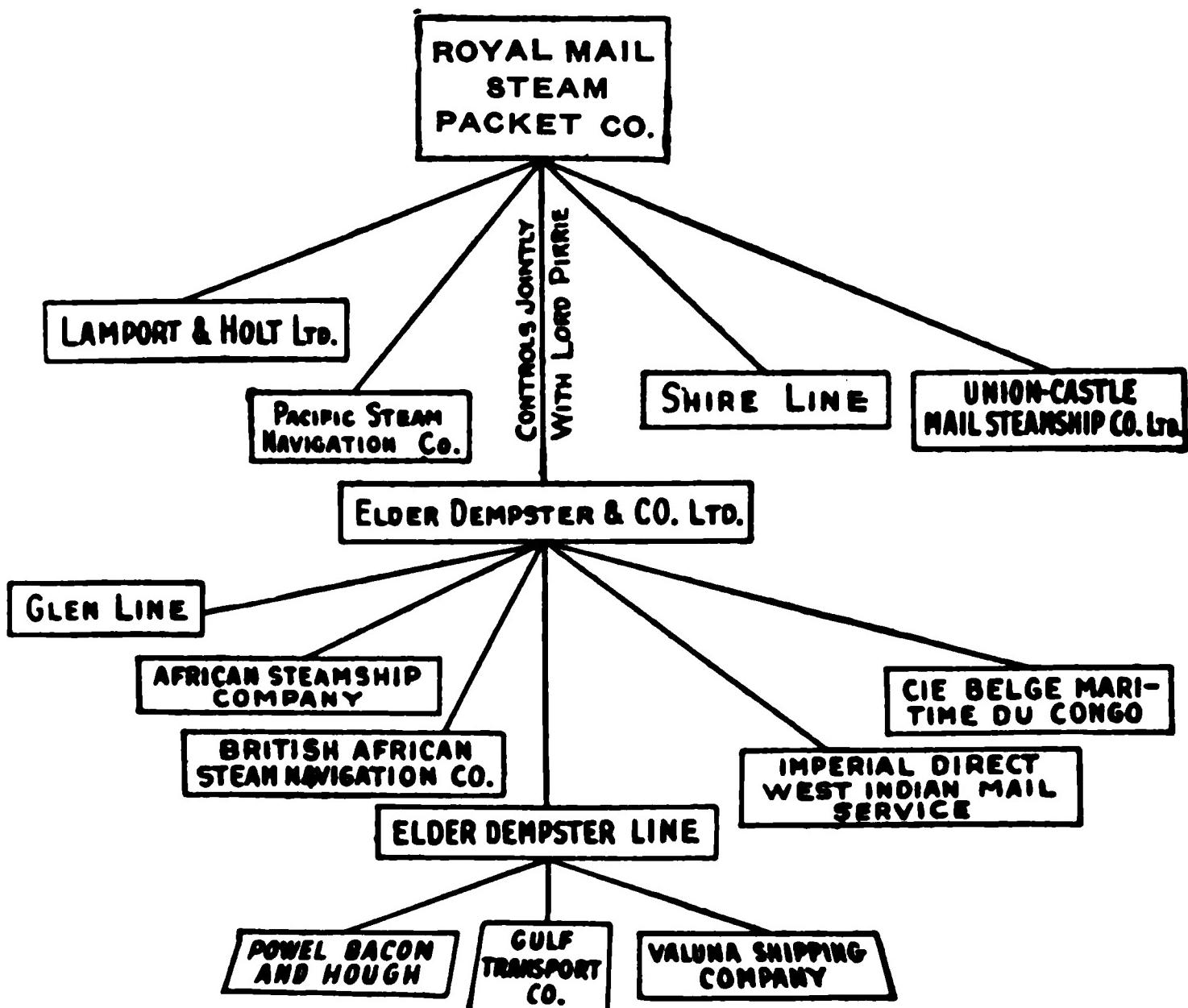
from New York

Lloydsabundo

Fast Italian Mail Steamers carrying passen-
gers and cargo to Naples and Genoa from
New York

The "group."—These "portmanteau lines" in turn are usually parts of larger combinations called "groups." These groups are affiliations of lines held together partly by stock ownership, partly by interlocking directorates, partly by agency agreements and by the loose links which are known as "community of interest." Usually these groups are built around one great personality of national and international repute, such as Lord Inchcape of the "P. & O.," Sir Owen Phillipps of the Royal Mail and Lord Pirrie of Harland and Wolff. The following chart represents the structure of the Royal Mail Group as it existed before the war. Additional lines and services have since come under the control of this group as the list below shows:

ORGANIZATION CHART OF A LARGE BRITISH STEAMSHIP COMBINE



The most important groups in British shipping.—The most important groups of British Lines are:

	NAME	TONNAGE (GROS)
Peninsular and Oriental Group:		
Peninsular and Oriental Steam Navigation Company.....	328,714	
Peninsular and Oriental Branch Line.....	51,122	
British India Steam Navigation Company.....	740,058	
New Zealand Shipping Company, Limited.....	115,634	
Federal Steam Navigation Company.....	107,717	1,793,0
James Nourse, Limited.....	23,516	
Hain Steamship Company, Limited.....	174,804	
Mercantile Steamship Company, Limited.....	21,061	
Union S.S. Company of New Zealand.....	230,440	
Royal Mail Group:		
Royal Mail Steam Packet Company.....	318,394	
Union-Castle Mail Steamship Company, Limited.	304,911	
Pacific Steam Navigation Company.....	169,993	
Lamport and Holt, Limited.....	248,336	
H. and W. Nelson, Limited.....	70,616	
Glen Line, Limited.....	74,454	
Elder, Dempster and Company, Limited.....	28,227	
British and African S.S. Company, Limited.....	103,423	
Elder Line, Limited.....	34,001	
African Steamship Company.....	105,590	
Imperial Direct Line, Limited.....	28,268	1,625,8
Coast Lines, Limited.....	17,017	
British and Irish Steam Packet Company, Limited	14,530	
Moss Steamship Company, Limited.....	25,885	
King Line, Limited.....	9,632	
City of Cork Steam Packet Company, Limited...	3,390	
Bullard King & Company, Limited.....	29,385	
J. & P. Hutchison, Limited	8,619	
Belfast Steamship Company, Limited.....	9,910	
Laird Line, Limited.....	8,979	
G. & J. Burns, Limited.....	13,973	
Cunard Group:		
Cunard Steamship Company.....	235,798	
Anchor Line.....	57,651	
Anchor-Brocklebank Line.....	155,310	
Commonwealth and Dominion Line.....	157,034	
Donaldson Line.....	16,746	
America Levant Line, Limited.....	8,758	631,2

Furness Withy Group:

Furness Withy and Company, Limited, (London)	32,095
Furness Withy and Company (Liverpool).....	46,118
Furness Withy and Company, Limited (New- castle).....	8,503
Gulf Line, Limited.....	33,381
Norfolk and North American Steamship Com- pany, Limited.....	23,817
Portuguese Steamers.....	22,932
Rio Cape Line, Limited.....	46,622
British and Argentine Steam Navigation Com- pany, Limited.....	22,376
Johnston Line. Limited.....	80,805
Neptune Steam Navigation Company, Limited..	31,675
White Diamond S.S. Company, Limited.....	11,009
London Welsh Steamship Company, Limited....	1,386
Prince Line, Limited.....	162,370

Ellerman Group:

Ellerman and Bucknall Steamship Company, Limited.....	94,869
Ellerman's Wilson Line, Limited.....	125,373
Wilson's and North Eastern Railway Shipping Company, Limited.....	5,852
Westcott and Laurence Line, Limited.....	8,284
City of Oran Steamship Company, Limited.....	23,304
Barcelona Steamship Company, Limited.....	4,372

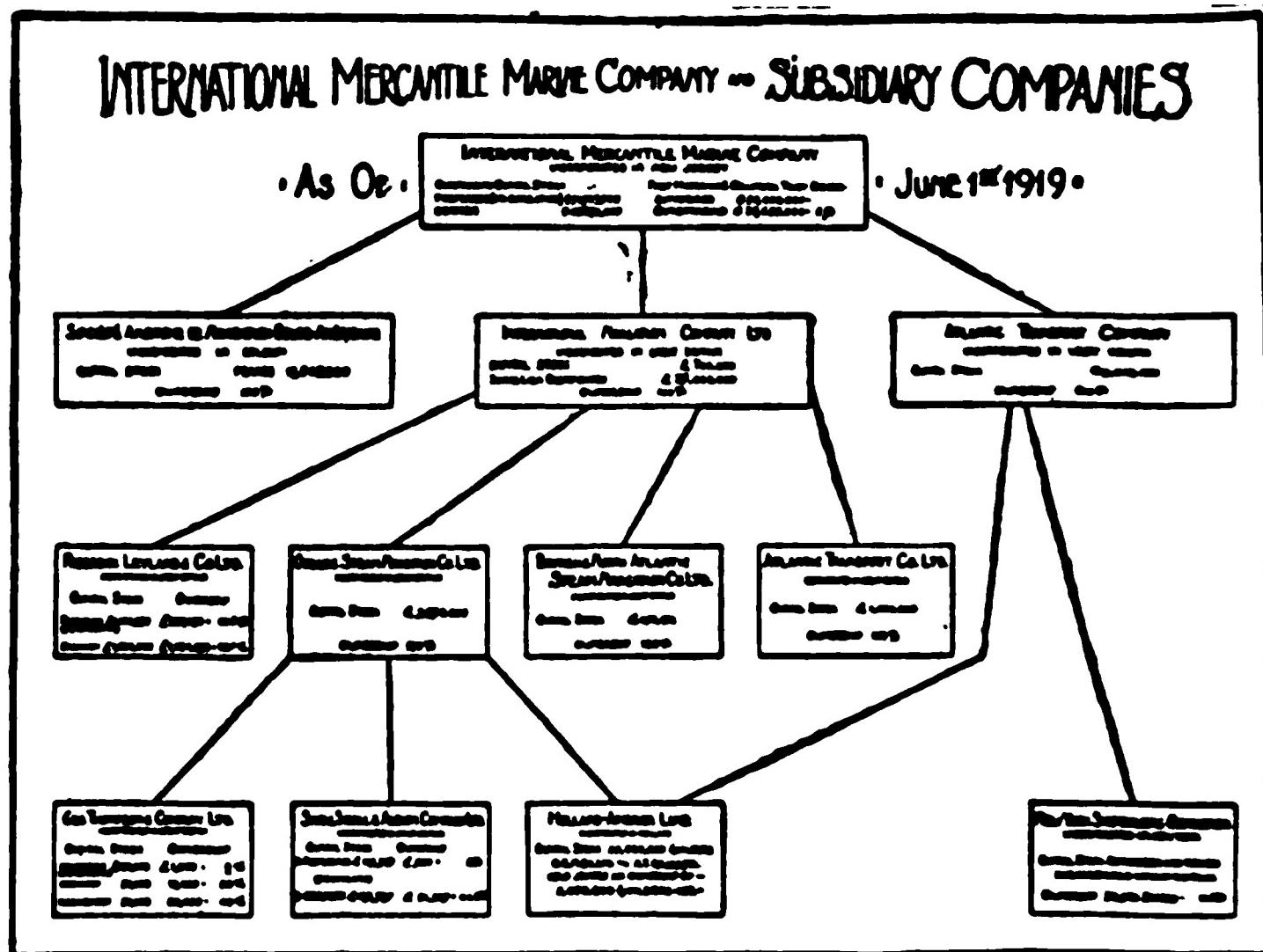
¹ See *Annual Report of Chamber of Shipping of the United Kingdom, 1919-1920*; also latest report of Liverpool Steamship Owners' Association. The figures for the Cunard Group were kindly supplied by the Cunard Steamship Company.

² The Cunard Group, at present, is committed to a building program, which by far exceeds that of any other group. The completion of the program will raise the Cunard group's aggregate tonnage to more than 1,000,000 gross tons.

During the summer of 1919, it was rumored in financial circles that a merger, involving the enormous sum of 150 million pounds, was planned whereby the P. & O., Cunard, Royal Mail and Furness Withy groups were to be welded together. While this report proved at least premature, these companies probably act in harmony on certain questions of general policy as is illustrated by their joint participation in the financial deal with the Doheny Mexican oil interests.¹

¹ See Chapter X: "The Bunkering Problem."

The Holding Company.—In this country, combinations in the shipping industry as well as in other industries, have taken the form of a holding company. The most prominent example is that of the International Mercantile Marine Company incorporated under the laws of New Jersey in 1902. The present organization and capitalization appears from the following chart which is taken from the Annual Report for the year ending June 30, 1919.



From the Company's 1919 Annual Report.

Several points in this chart require a word of comment. In the first place, the well-known American Line does not appear on this chart although it is a part of the "I. M. M." system. The reason is that as far as the boats of the American Line are concerned the International Mercantile Marine Company of New Jersey acts as owner and operator, so that

- the name of the American Line does not appear at all in the organization chart although it plays a prominent part in all the advertisements of this combine.

Secondly it should be pointed out that the "Société Anonyme de Navigation Belge-Americaine" is the well-known Red Star Line. The Ocean Steam Navigation Company, Ltd., is better known as the White Star Line.

The "I. M. M."—It appears from this chart that the British companies, are controlled indirectly through a second holding company, incorporated in the United Kingdom. Some of these companies are completely controlled, others only partly. Particularly in the case of the Holland-America Line, the connection is only a loose one. The partial control over the New York shipbuilding company will be discussed later.

The International Mercantile Marine Company, since its organization in 1902 by John Pierpont Morgan, has passed through periods of financial difficulties partly owing to over-capitalization. When the war broke out the company was in the hands of a receiver with over 80 per cent. of accumulated preferred stock dividends due to the stockholders and was unable to meet fixed charges. The war with its inflated freight rates was the salvation of the company. The receivership was terminated and a considerable amount of "water" was eliminated.

The agreement between the International Mercantile Marine Company and the British Government concluded in 1903, which obligates the American holding company not to pursue a policy injurious to the British merchant marine or to British trade has repeatedly attracted wide attention and has occasionally aroused bitter feelings. The question became acute in connection with the allocation of Shipping Board tonnage. As a result, late in January, 1921, the

Shipping Board began a formal investigation into the status of this corporation. The bearings have, in the meantime, been concluded, but the decision of the Board has not yet been announced.¹

An anomalous situation.—The International Mercantile Marine Company finds itself in a most unfortunate position. Nominally this company with its 1,015,000 tons of shipping may lay claim to the title of the premier American steamship organization. On the other hand, only 13 per cent of this tonnage is of American registry, while more than five-sixths of the total tonnage owned is under the British flag. The result is that the company's actions are viewed with suspicion on both sides of the ocean. In order to end the anomalous situation, the company in 1917 attempted to dispose of its holdings in British steamship enterprises for \$135,000,000 with the idea of investing this sum in American vessels. The plan was not approved by the American stockholders. The Shipping Board is now expected to recognize the difficult position in which the company finds itself and should take the initiative in suggesting a plan of operation under which the company may obtain a clean bill of health.

The Harriman Combine.—Another prominent American steamship combine is that grouped around the person of W. A. Harriman, son of the famous railroad magnate. The combination is sometimes referred to as the American Ship and Commerce Corporation, sometimes as the United American Lines, Incorporated. Previous to the latest reorganization, the chief holdings² in shipping concerns were as follows:

¹ February 20, 1921.

² *Nautical Gazette*, June 12, 1920, p. 879, and August 14, 1920, p. 197.

CONCENTRATION AND COMBINATION

4

Navigation Co., Inc.. owning	10	vessels of	77,605	D. W. To
operating	10	" "	106,484	" "
more, Dearborn & Co.. operating	42	" "	157,436	" "
mut Steamship Co....owning	3	" "	21,000	" "
merican-Hawaiian Steam-				
p Co.....owning	16	" "	174,330	" "
twise Transportation				
. (Boston).....owning	10	" "	76,500	" "
			813,355	D. W. Tons

The method of control is both complicated and interesting because it reflects the diversity of the various incorporating laws of different States and is a clear example of the way in which a corporate organization strives to reap the benefit of the most favorable features of the various State laws. The following is a statement of the relationship between the various companies supplied the writer by one of the officers of the American Ship and Commerce Corporation:

American Ship and Commerce Corporation is a holding company organized under the laws of the State of Delaware, owning only the majority shares of American Ship and Commerce Navigation Corporation—organized under the laws of the State of New York, formerly known as the American Navigation Corporation—and the majority shares of John Cramp & Sons Shipbuilding and Engine Works; also majority shares of the Shawmut Steamship Company, Boston corporation.

Associated with these companies—but with no direct financial connections—is the *American Hawaiian Steamship Company*, which in turn owns the majority shares of the Coastwise Steamship Company.

The operating activities of all these owning steamship companies is centred in the *United American Lines, Incorporated*, which company is purely an operating company and does not own a single steamer. The stock of United

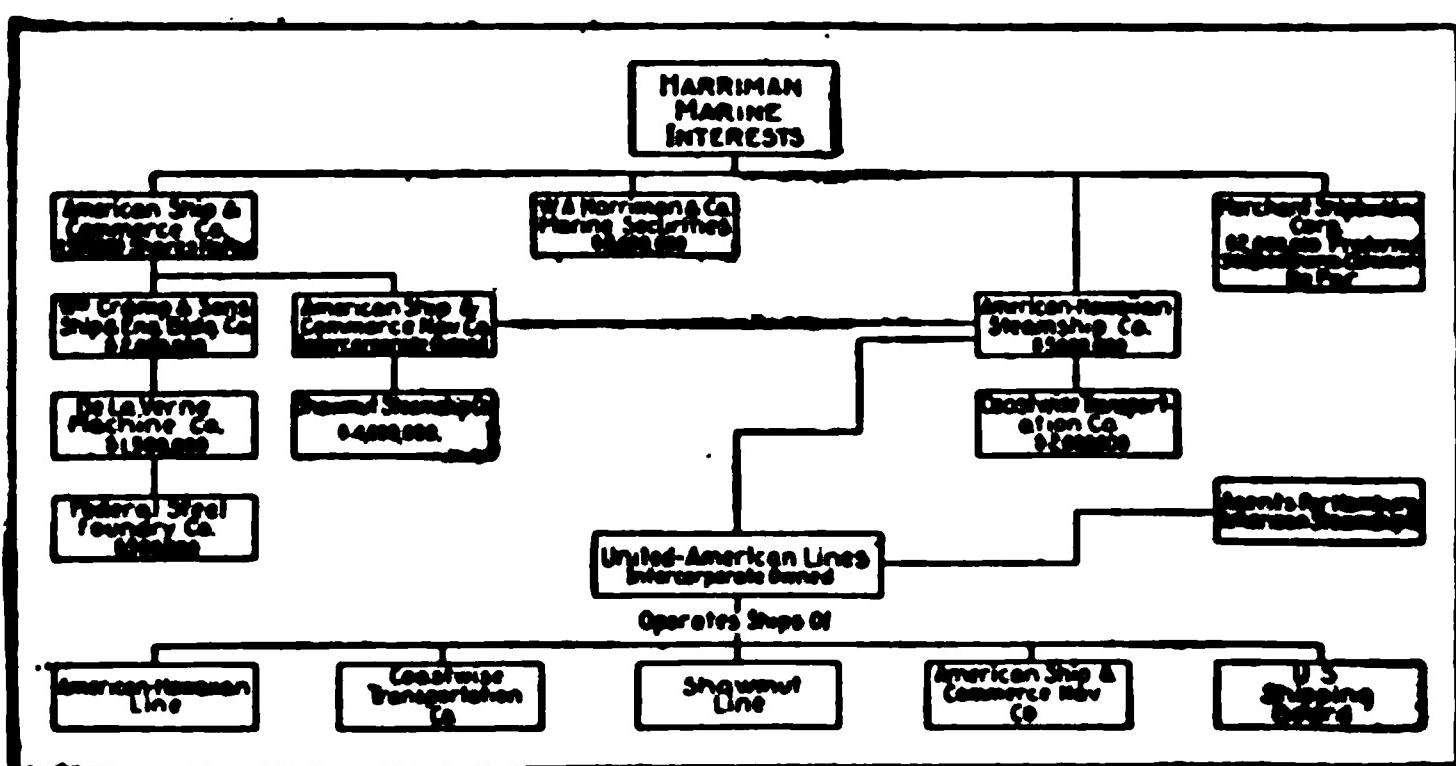
OCEAN SHIPPING

American Lines, Incorporated, is held jointly, in equal parts, by the American Ship and Commerce Corporation's subsidiary, American Ship & Commerce Navigation Corporation, and American Hawaiian Steamship Company.

"United American Lines, Incorporated, in addition to acting as operating agent for the above-named steamship companies, also acts as United States Shipping Board operator for steamers in the service from New York to the Near East, Java and the Straits Settlement.

"The Harriman shipbuilding corporation, known as Merchants Shipbuilding Corporation, with plants at Bristol and Chester, Pennsylvania, is not in any way affiliated with the United American Lines, Incorporated, because United American Lines, Incorporated is not a shipowning or shipbuilding company but a ship-operating company."¹

The following organization chart gives a clear conception of a complex matter:



ORGANIZATION OF THE HARRIMAN AND VARIOUS AFFILIATE MARINE PROPERTIES

Courtesy *Marine Review*.

¹ Since this was written the Harriman Marine Interests have furthermore branched out into the export coal business with the formation of Warren Export Coal Company in January, 1921.

American Ship and Commerce Corporation attracted attention when it was announced that an operating agreement with the Hamburg-American Line had been signed. According to this agreement, which seems to have been approved by the Shipping Board, the United American Incorporated will operate ships—partly ex-German—over the trade routes formerly served by the Germans, taking advantage of equipment and organization which the Germans had acquired and developed in the days of the war. A less far-reaching contract exists between the United States Mail Steamship Company and the North German Lloyd of Bremen.

A. G. W. I. combination.—Another prominent example of shipping combination is the case of the Atlantic and West Indies Steamship Lines which we mentioned in the previous chapter in connection with the formation of the Standard Gulf Oil Corporation of Virginia of which the A. G. W. I. Lines own 53½ per cent. The following table shows the most important subsidiaries of the A. G. W. I. Lines and their marine equipment.

**THE EQUIPMENT OWNED AND OPERATED BY
ATLANTIC, GULF AND WEST INDIES STEAMSHIP
LINES AND SUBSIDIARY COMPANIES
DECEMBER 31, 1919**

	No. of Ships	D. W. Tons	No. of Tugs	D. W. Tons	No. of Lighters	D. W. Tons
A. S. S. Lines.....	12	41,075	.....	.....	.....	.....
Co.....	21	55,032	2	185	36	11,225
A. S. Co.....	14	61,047	2	186	24	8,375
Colombia Mail S. S. Co.....	14	66,023	6	750	29	11,855
Colombia de Nav.....	.....	.....	2	261	36	9,208
Puerto Rico S. S. Co.....	9	38,210	.....	.....	.....	.....
A. S. Co.....	3	7,212	.....	.....	.....	.....
Caribbean Lighterage Co.....	.....	.....	3	118	17	2,625
Caribbean & Lighterage Wing & Lighterage.....	.....	.....	.....	.....	1	125
Caribbean Co.....	.....	.....	1	20	.....	.....
Caribbean Terminal Co.....	.....	.....	.....	.....	3	1,060
.....	73	268,599	16	1,815	146	44,462
A. S. S. Lines.....	14	172,400	.....	.....	.....	.....
.....	87	440,999	16	1,815	146	44,462

Horizontal and vertical combination contrasted.—So far we have confined our attention to the so-called horizontal combinations; but the movement towards concentration goes further. On the one hand, shipping interests branch out into new fields, on the other they are being absorbed by outside interests. In each case, we speak of vertical combinations or "integration," a term which covers combinations of enterprises, engaged in the same field, but not in the same stage of production.

We begin with that group of combinations in which shipping plays the active part in supplying the stimulus towards concentration. In the lower right-hand corner of the chart showing the organization of the International Mercantile Marine Company, we note the name of the New York Shipbuilding Corporation, 16.5 per cent. of whose capital is held by the Atlantic Transport Company. Here we have the most natural vertical combination in the shipping field. The shipowner wishes to assure for himself prompt service and due attention to his new orders as well as to his repair work, and at the same time wishes to share in the profits accruing from this business. Two other shipping companies are interested in the same shipyard—W.R. Grace and Company, who control the Merchant Line, and the Pacific Mail Steamship Company. The three shipping concerns just mentioned enjoy in common the particular interest of the American International Corporation, a subsidiary of the National City Bank of New York, and it is probable that the joint control of these steamship lines over the New York Shipbuilding Corporation was conceived and executed by American International interests. Another example of this type is the above-mentioned Harriman combine.

Shipping assures fuel supply.—The next important

field into which shipping concerns have projected the tentacles of financial control is that of the production and distribution of fuel, both coal and oil. Before the war the Hamburg-American Line was said to be interested in the Rhenish Westphalian Coal Syndicate for the purpose of assuring its supply of bunker coal. In our chapter on "The Bunker Problem" we have mentioned two prominent cases of shipping concerns buying up oil interests, the one referred to a subsidiary formed by prominent directors of leading British shipping companies for the purpose of assuring a certain supply of fuel oil from a Mexican oil field of Mr. Doheny's, the other to the Atlantic Gulf and West Indies Company, whose purchases of Mexican oil property were much more for the purpose of sharing in the remunerative business of carrying oil from Mexican fields than for the purpose of guaranteeing a bunker supply.¹ Other instances could be cited but the foregoing will suffice to show the tendency.

Shipping branches into financial enterprises.—Another territory which steamship companies are beginning to invade is banking. It is characteristic of British steamship methods to take care of the by-products of the shipping industry. The late Sir Alfred Jones, a well-known Liverpool shipowner, is generally regarded as a pioneer in the field. To further the steamship business with West African ports he founded the Bank of British West Africa, which later passed under the control of Lord Pirrie and Sir Owen Phillipps as part of the Elder, Dempster deal. The latest development is the formation of the Peninsular and Oriental Banking Corporation with a capital of five million pounds, and with Lord Inchcape, chairman of the "P. & O.," at its

¹ See Chapter X: "The Bunkering Problem."

head. On this side of the Atlantic, two similar cases can be cited that of the recently established banking house of W. A. Harriman and Company, a concern affiliated with the Harriman shipping and shipbuilding interests and organized for the special purpose of pushing the sale of marine securities. The other is the case of W. R. Grace and Company, which will be taken up later in a different connection. This development may go one step further by entering the marine insurance field. Again the Harriman combine is a case in point with its control over Monks, Goodwin & Shaw, a marine insurance company.

Shipping absorbed by producing interests.—We now come to those forms of vertical combinations where shipping plays a secondary part and is itself absorbed or acquired by other primary interests. Those may be found in all branches of economic activity—extracting, manufacturing, trading and railroading.

In some cases all these activities are joined into one huge organization. Consider the ramifications of the Standard Oil Company, or the Royal Dutch Shell, or any other of the very large oil companies. Their activities embrace extraction, land transportation, manufacturing, marketing and shipping operations. The original idea in the case of these oil companies was to provide the especially-fitted type of carrier which their product requires. But the tendency to-day is to go into the shipping business as common carriers, at least on the return voyage, so as to assure the greatest possible economy and paying value. This development has reached an advanced point in the case of the United Fruit Company, which also began its shipping ventures by carrying only its own products, which, like oil, require specially adapted vessels. To-day the "Great White Fleet" is one of the most important common carriers on the routes converging in the Caribbean

It is rumored that the United Fruit Company will, in too distant future, develop into an important oil pro-

This expectation is based upon the fact that the vast estates of tropical land owned by the United Fruit Company lie within the oil bearing belt of Central and South America. The United Fruit Company is also an important cane producer and sugar refiner and as such works on the same ground with the American Sugar Refining Company, another corporation which has become, or is about to be, an important shipowner. The molasses tankers of American Sugar Refining Company will also be equipped in a way that a certain amount of general cargo can be carried.¹

case of the steel industry.—Another industry which has absorbed shipping to a considerable extent is the steel industry, particularly as it is represented by large concerns such as the Bethlehem Steel Corporation, the United States Steel Corporation, and the recently organized U.S. Steel Corporation. Of these the Bethlehem Steel Corporation is in a rather unique position because it largely depends on Cuban and Chilean sources for its ore supplies. Its interest in shipping, therefore, originally centred around the carrying of ore by specially built steamers. The latest development is to develop a type of boat which will take oil on the outward voyage and ore when homeward bound. The United States Steel Corporation, on the other hand, depends on Lake Superior ore. Its ore vessels, therefore, sail on the waters of the Great Lakes, taking coal in return. Besides this, however, the United States Steel Corporation through the United States Steel Products Company, owns a large fleet augmented frequently by chartered steamers, carrying its own ore products to foreign markets. More-
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over, of late, the United States Steel Corporation is entering the shipping field as a common carrier, through the medium of the New York and South American Line and the recently formed Isthmian Line, whose boats ply from the Atlantic to the Pacific Coast of the United States through the Panama Canal. The shipping interests of the British Steel Corporation, whose center of gravity lies in Eastern Canada, are represented by the Canadian Steamship Line. All these steel "trusts" are important shipbuilders. The Bethlehem Steel Corporation Ltd., through its subsidiaries, has large shipyards at Fall River, San Francisco, Elizabethport, Wilmington and Sparrow's Point. The United States Steel Corporation, during the war, developed two enormous plants at Kearney and Thickersaw, Alabama, while the yards of the British Steel Corporation are located at Port Arthur, Lake Superior, Levis, opposite Quebec and Halifax.

Other examples.—A case on the border line between producing and trading interests is that of the Cambrian Coal Combine, an organization prominent in the British coal export trade whose various parts were brought together by the organizing genius of the late Lord Rhondda.

The best example of merchants branching out into the steamship business is that of W. R. Grace and Company, whose merchant line was mentioned before, and that of Gaston, Williams and Wigmore, who operate a fleet of steamers known as the "Globe Line."

Railroad control over steamship lines.—It would lead us too far to give, even approximately, an idea of the extent to which railroads have extended their service beyond the boundaries of their domain on terra firma. We confine ourselves to some of the more important facts. The Pacific Ocean, because of the length of passage and the absence of purely local traffic, seems to be the natural sphere

railroad-steamship line. Until recently the Pacific Steamship Company, controlled by the Southern Pacific and, divided the field with the Great Northern Steamship Company of the Hill roads, the Pacific service of the Canadian Pacific Railroad and certain Japanese lines. Of the Canadian Pacific Company, with its lines on oceans, is by far the most powerful of all the railroad-steamship lines. It is encouraged and subsidized by the Canadian and the Dominion governments and has done much to help up the trade and commerce of our neighbor in the

United States railroads have proved their enterprising spirit by establishing trans-oceanic services on the Atlantic. Thus, the Pennsylvania Railroad Company participated in the establishment of the American Line to Liverpool. The Johnston Line from Baltimore to Liverpool was wholly owned by the Baltimore and Ohio Railroad.

Sign railroad-steamship lines.—In England the railroad-owned steamship line is common in almost all the principal routes from ports on the east coast to the Continent and also in the service across St. George's Channel and the Irish Sea, separating Ireland from Great Britain. Thus the London and North Eastern Railway runs a line in its own name from London to a large number of continental ports. The Lancashire and Yorkshire Railroad has services to nine ports of the Continent and to Scandinavia. The British railroads have, thus far, not entered the trans-oceanic business; and there is little reason to believe that they will do so in the future, because there are splendid steamer connections between almost all ports of the world of moderate significance. The oversea needs of the country do not require to be adequately covered now.

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CHAPTER XXIV

POOLS, AGREEMENTS AND CONFERENCES

Network of agreements supplements combinations.— The movement towards concentration described in the previous chapter is supplemented and aided by numerous agreements and conferences, some of which are again reinforced by pooling arrangements. To the extent that concentration is based on ownership relations, pools, agreements and conferences become less important, at least in number. This does not mean that the conference is less important to-day than before the war. On the contrary, the war, through the temporary elimination of German competition and the subsequent strengthening of British supremacy in such trades where American enterprise does not yet appear as the new rival, has solidified, though changed, the old agreements.

Important investigations. — Careful investigations carried on by the governments of both this country and Great Britain have revealed the nature and the scope of almost all shipping rings, conferences, pools and other agreements existing at the respective period during which the investigations were made. In the United States the investigation of shipping combinations carried on in 1913 by the House Committee on the Merchant Marine and Fisheries, showed that the advantages of shipping combinations are greater than their drawbacks. It was found that, contrary to popular belief, shipping combinations were not confined to American trade, but were universal in their nature and not necessarily directed against the interests of the United States.

The government investigations referred to above brought out with striking clearness the fact that no combination of lasting influence and large scope can exist among tramp vessels. To organize the numberless tramps whose ownership is scattered among hundreds of individuals and companies, is an impossibility. Tramps are quickly built. A broker will soon find cargoes and by slightly cutting the rate, the new competition will secure abundant and profitable employment, leaving idle the boats which, bound by their agreements, must charge the higher rate. Mr. Robert Edwards Annin writing for the *Nautical Gazette* (Dec. 11, 1920), gives a dramatic account of the difficulties of tramp organization. Coming from a practical steamship man, this version is especially valuable. In part Mr. Annin writes as follows:

"To be effective, a general agreement of this sort must include all the maritime nations of the world. Under strained conditions, when rates are being maintained with difficulty, the news that someone is cutting acts upon the trade a good deal like the cry of treachery on a hard-pressed army. It causes a general *sauve qui peut*. Universal good faith would be the prime condition of success in such an enterprise; and such good faith would have to be generally shown not only among American shipowners, operators and agents; among the same class in England, France, Italy, Scandinavia and Japan; but in Java, Sumatra and the Malay Archipelago; East of Suez, ("where there ain't no ten commandments"); in Egypt, where the science of bunco-steering had risen to the level of a fine art 2,000 years before the Christian era; and in India, where Kipling once said that one could buy a murder case, complete (including the corpse and witnesses) for 54 rupees.

"At this stage of the investigation, the problem of main-

tramp rates by agreement becomes appalling. The thus to regulate the world's rates would be both ve and futile. Granted an army of well-intentioned , the individuals composing it would be huinan and, e, subject to temptation. Who could keep them all ? As Mr. Juvenal once remarked, *quis custodiet istos deos*; which being interpreted is to say: 'Who p tabs on the auditors?"

in, assuming for the sake of argument that rates maintained, every other material condition of char agreements would have to be standardized, and such ns enforced by an all-embracing authority. This involve a reduction to uniformity of thousands of forms used by thousands of operators in hundreds all over the world. The effect of maintaining rates d leaving other conditions discretionary, would be ering the bottom of a colander, and leaving the itouched. The bottom would be tight, but the side ould work overtime.

re are few trades in which the opportunities for hid- cessions are as great as in the chartering of tramp It is impossible to foresee what sharp corners would or what sinuous turnings would be used by owners ts, when confronted with the choice of beating the rates, or having their ships lie idle. An agent could ecially lenient terms as to tendering and cancelling; r days; low demurrage; high despatch money; all y adjusted to the benefit of the charterer. Charter night be provided where charterers paid for load- l discharging, receiving an inordinate allowance . Allowances for extra insurance could be These are simply a few of the possible Occidental ; of evading the letter, while violating the spirit,

of a rate agreement. "East of Suez" the imagination fails!

"One can imagine that the maintenance of rates on occasional ships might be intimately connected with the 'absorption of back charges' from Copra schooners among the purple isles of the Pacific; the compensation of dark-skinned canoe-men in the upper waters of the Congo; or the watering of eight-day camels amid the sandy wastes of Sahara."

Absence of tramp organization.—We see the difficulties which a promoter of tramp owners' associations has to face are as numerous as they are great. Nevertheless, attempts at bringing about such organizations have been made. Many associations formed to protect their mutual interest manifest their willingness to co-operate and show their possession of the necessary *esprit de corps*. But every attempt to control charter rates has proved futile, in spite of the strong feeling of solidarity which prevails among large groups of tramp owners.

Several attempts have been made at such rate control. Whenever a serious depression befalls the shipping industry, the desire to raise the rate level to a profitable height by concerted action is naturally strong. Thus, the formation of the "Sailing Ship Owners' International Union," with headquarters at London, was largely a result of the slump in the general rate level which occurred after the extraordinary boom caused by the Boer War. A secondary factor was the large subsidies which the French government, unlike other governments, was granting to the sailing ship owners of that country. The Union was organized in 1904, and in 1905 the tonnage interest covered by the Union's agreement represented as much as 87 per cent of the British, French and German sailing tonnage. Yet, in spite of this large

the work of the Union met with but little

of the Union was limited to minimum certain long voyages; (3) to voyages home-
port only; (4) to vessels of certain sizes only;
g vessels only; *i.e.*, to vessels which to-day no more than five per cent of the work of
ortation.

tional conditions have led to the organization of "The Tramp Steamer Bulk Cargo Conference" which represents steamers owned by the United States and employed in tramp service. It has the int ownership. It will be discussed more fully in Chapter. (For "By-Laws and Regulations" see .")

restricted in the scope of its activities in the "Red and White Sea Conference" which was organized in Copenhagen. It does not attempt any whatsoever, but confines itself to matters of uniform charter parties and standardization

tramp competition on line organization.— As given are the most conspicuous effects on among tramp owners, and they serve to impossible of efficient tramp organization to the reverse. How this large and uncontrollable of charter vessels reacts upon the line traffic understood. It represents a constant menace to, one of many great controlling agreements and of lines. It should however be understood that, as, such as the Canadian Atlantic trade, tramp exercise at best only a sporadic influence, which protection whatsoever to shippers requiring

regular shipments in less than cargo lots. Nor does tramp competition materially affect the highest types of steamship service.

Liner co-operation more easily achieved.—There are many reasons which render rate control and intensive co-operation among liners easier and more practicable than like attempts in the charter traffic. The liner represents a much larger unit than the tramp vessel; this means that the cost of duplication is greater. High-class liners offer fast service and passenger accommodations; for this business tramps can not come in and compete. The liner traffic, furthermore, shows a greater concentration of ownership; the smaller the group of men which controls a certain trade, the more easily can this trade be efficiently organized. Another important consideration arises from the fact that the tramp which has demoralized freight rates in a given trade, thanks to its freedom from route restriction, can escape punishment by fleeing the scene of action, while the liner "must stay in the water it has troubled and suffer the consequences of its deed."

Costliness of rate wars.—Rate-cutting in the liner traffic in most cases leads to costly rate wars in which both sides lose heavily. The privacy of the individual negotiation which fixes the charter rate, as opposed to the publicity ruling among liners, makes rate cutting easier for the tramp. But while it is thus evident that agreements among liners are more easily made than in the charter traffic, it would be wrong to underestimate the difficulties confronting those who organize steamship line agreements. The limitations resulting from these difficulties lie more in the scope of activity of, and the degree of control exercised by, individual conferences than in the number of existing agreements.

t the difficulty does not end when an agreement is
ed. New lines may endeavor to work their way
the ring and fight the existing monopoly. Then the
costliness of rate wars which led to the old agree-
helps the newcomers to enter.

e New York-Caribbean trade affords an interesting
ple of the relation of existing conferences to new

Until the end of the last century the Atlas Line, English corporation, was the only company offering a service in this trade. Owing to an over-conservative management, which was rather old-fashioned in its odds, the company made little headway. The Ham-American Line, realizing the opportunity presented, purchased the company, modernized the service, within five years was in a position to show considerable profit. At that time, the Royal Mail Steam Packet Company started a competitive service which led to a fierce rate war between the two rivals. This ended, after two years of struggle, with an agreement between the two companies. It was the United Fruit Company which, by changing its character from a private line to that of a common carrier, threatened to disturb the balance of power. Realizing the strength of the newcomer, German and British lines decided to take the United Fruit Company into their confidence, preferring to share the profits rather than to risk losing them in a hopeless war.¹

Purpose and scope of agreements.—The principal purpose is the regulation of competition through either, (1) fixing or regulation of rates; (2) the apportionment of traffic by allotting the ports of sailing, restricting the number of sailings, or limiting the volume which certain

¹ See B. Olney Hough. *Ocean Traffic and Trade*. p. 182.

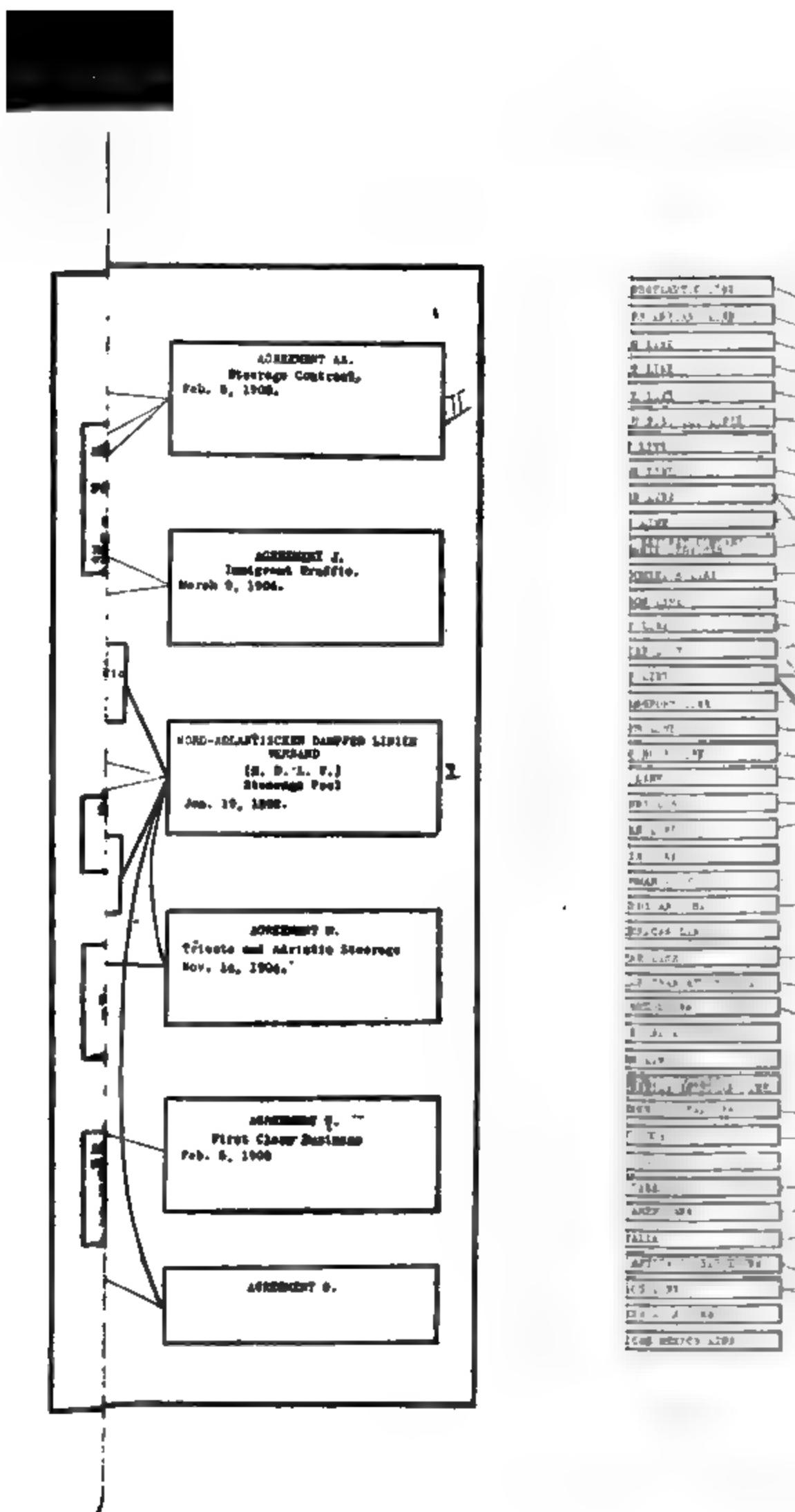
lines may carry; (3) the pooling of earnings from all or a portion of the traffic; or (4) meeting the competition of non-conference lines. The so-called *Alexander Report* published by the House Committee on the Merchant Marine and Fisheries (February 1914), showed that eighty such agreements or understandings, involving practically all the regular steamship lines operating on nearly every American or foreign trade route, were in existence. It would be wrong, however, to assume that, in the case of the foreign trade of this country, agreements are more numerous or more noticeable than in other parts of the world. As a matter of fact, long voyages furnish a better field than the transatlantic trade for the establishment of rate-controlling combinations. Long voyage trades are usually more expensive and require less frequent sailings, thereby reducing the number of participants in the service. It is therefore only natural to find shipping trusts, rings, and conferences more firmly established, and in larger numbers, in trade with the Antipodes than in the transatlantic traffic.

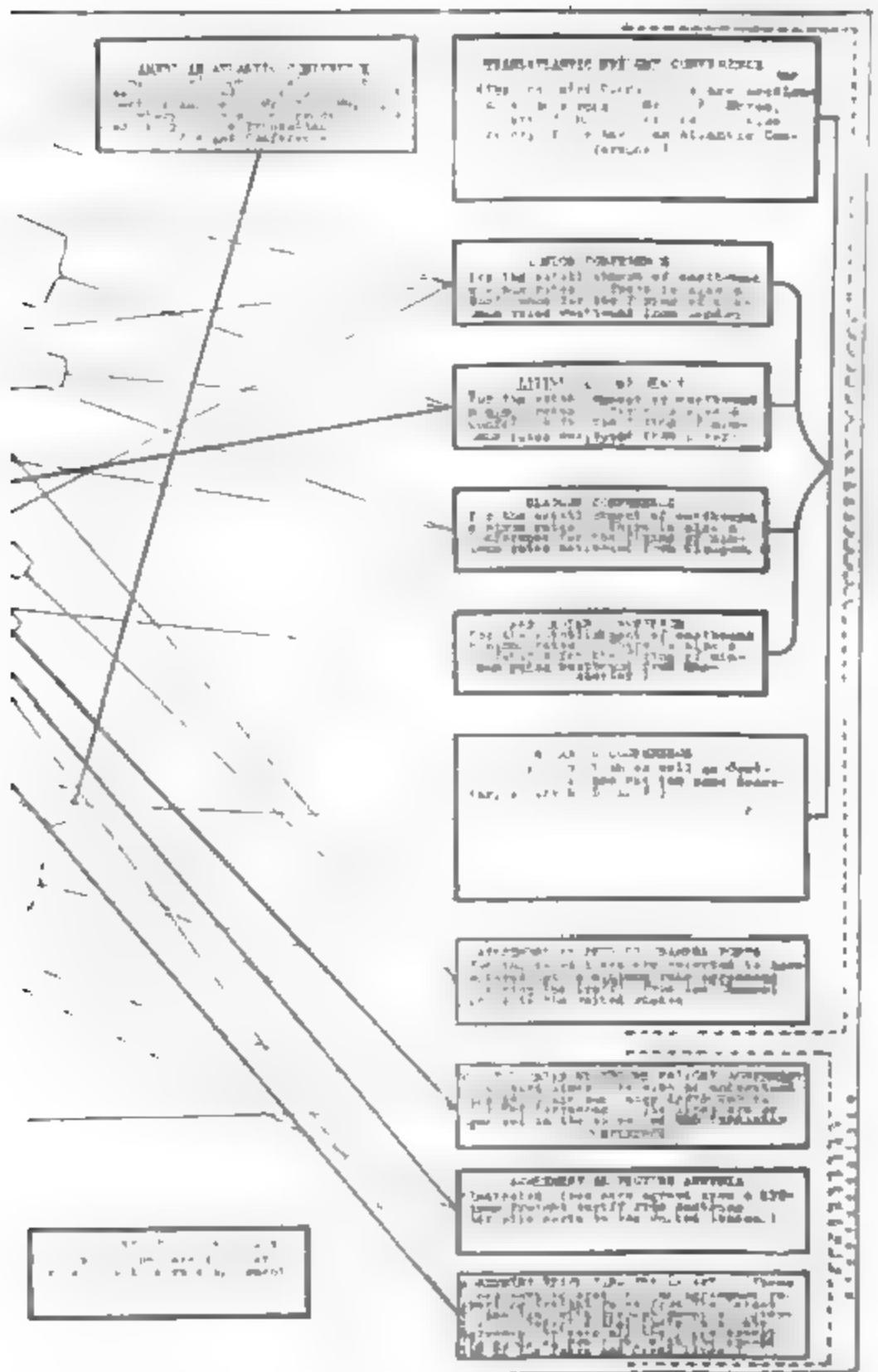
The two charts immediately following show the interrelation of the most important transatlantic lines for (1) passenger, and (2) freight business, as revealed by the investigations of the above-mentioned House Committee.

Of course, the war has changed the personnel, as it were, of these conferences but, generally speaking has by no means weakened them. On the contrary, 'since the war, the effectiveness of conference rules has been fortified in every conceivable way.'¹

History of Conferences.—The first beginnings of the system of North Atlantic steamship conferences reach as far

¹ Rosseter before Senate Committee on Commerce, p. 1986, Hearings on "Establishment of an American Merchant Marine."





ack as 1868. But, generally speaking, the early seventies mark the opening of the interesting chapter of world-wide steamship line agreements. Its history is coincident with the modern development of the liner business.

As early as 1875, a conference regulated the Calcutta trade, and in 1877 the deferred rebate system was introduced, the weapon which enabled the lines to put the conferences on a permanent basis. In 1879, the China conference was formed, and in 1884, the Australian. In 1886, the South African conference came into being and in 1895 the West African and the North Brazilian. The River Plate and the South Brazilian trades followed in the next year.

In 1904, the trade with the West Coast of South America is covered. Besides these, there are many others, the Atlantic Pool, the Java-Europe conference, etc. In fact, practically the whole globe is but one network of pools and conferences extending as far as the line business itself reaches.

Conferences and pools contrasted.—The combinations existing between shipping lines may be divided into two distinct groups—conferences and pools. Of these, the pool is the higher form of development. While a conference can exist without a pool, a pool cannot exist without a conference. A conference may be merely a "gentlemen's agreement" calling only for occasional meetings of the interested managers, to discuss questions of administration, forms of bills of lading, methods of receiving and delivering cargo, etc. In other cases, however, the agreement is based upon a firm and binding contract, which is executed in writing, signed and sealed, "visiting severe penalties on any of the heavily bound signers who may violate its terms."

The pool is merely a corollary of the conference. Pool-

ing, when applied to steamship lines, involves the payment of some part of the freight or passage money into a common fund. This fund is later divided among partners according to a scale agreed upon. The pool does not necessarily kill the desire of a member line to have as large a portion of a given trade as possible, but usually obviates the scramble for a favorable position which often leads to irregularity as to sailing dates, port of call, etc. Should a pool member not carry his share of the joint tonnage without aid, he would have his quota of the earnings of the pool reduced.

Various kinds of pools.—The form and administration of pools differ materially according to the various kinds of trades. In its simplest form, the pool has to do with merely one, two or several articles of the cargo carried. In its more elaborate forms the pool not only divides the money received for the carriage of freight or passengers, but also the traffic itself, so that a reasonable relation is brought about between pooled earnings and service performed. Under such circumstances the steamer works with considerable fairness, especially when the cost of operating the individual steamer is also taken into consideration.

Agreements with freight brokers.—In some cases agreements may extend into allied territory. Thus "agreements" are alleged to exist between the Transatlantic Associated Freight Conferences and the Steamship Freight Brokers Association, both of New York. A great deal of dust was stirred up when a Federal Grand Jury, early September 1920, indicted 38 of the leading transatlantic steamship companies plying to and from the port of New York for alleged restraint and monopoly of trade in violation of the Sherman anti-trust law. The indictment

named four freight brokerage corporations and five individual freight brokers. One count of the indictment alleged a conspiracy between the freight brokers and the steamship lines to keep all the freight brokerage business going to and through New York in the hands of the Steamship Freight Brokers Association. We quote the following from the *New York Sun*:

"The indictment charges and the petition for the dissolution of the Steamship Freight Brokers Association and of the Trans-Atlantic Associated Freight Conferences, sets forth that the defendants on January 1, 1917, conspired and have since continually violated the Sherman anti-trust law by restraining interstate trade and foreign commerce in grain, oil, lumber, coal and other commodities and manufactured articles produced and made throughout the United States and in foreign countries.

Percentage of Freight Handled.—"It is alleged further that upward of 50 per cent of such foreign trade and commerce passes in the due course of business through the port of New York, and that 30 per cent. of the 50 per cent. is handled by freight brokers and forwarders, and of that 30 per cent. upward of 80 per cent. is handled by about seventy-five of the freight brokers or forwarders who are members of the Steamship Freight Brokers Association and is transported by the steamship companies named as defendants in the proceedings.

"The indictment avers that the steamship companies included in the Trans-Atlantic Associated Freight Conferences and the brokers and forwarders included in the Steamship Freight Brokers Association entered into agreements not to permit any freight broker or forwarder to become a member of the association "unless he would swear to and would observe, adhere to, abide by and be subject

to the constitution and by laws of the Steamship Freight Brokers Association." and would agree that the fixed rates offered or quoted by the authorized agents of steamship companies should be observed, adhered to and maintained.

"It is further charged that illegal agreements entered into included compacts to discriminate and discriminate against freight brokers and forwarders by refusing to pay any 'brokerage fee,' so called, to any person not a member of the Steamship Freight Brokers Association; agreeing to control and dominate, through the organization and control of the New York Produce exchange, the members of Steamship Freight Brokers Association by requiring applicants for membership therein to become members of the New York Produce Exchange.

"Agreeing to blacklist and blacklisting all freight brokers and forwarders who were not acceptable to or approved by defendant steamship companies and the board of directors of said Steamship Freight Brokers Association; agreeing to limit the membership in the said Steamship Freight Brokers Association by requiring all applicants for membership in said association to become members of the New York Produce Exchange, the membership of which is now and for a long time past has been, closed; agreeing that all contracts for the shipment of said freight be made subject to the rules of the New York Produce Exchange; agreeing that no member of the said Steamship Freight Brokers Association shall divide any 'brokerage fee,' so called, with any person other than fellow members of the said Steamship Freight Brokers Association; agreeing that no member of the said Steamship Freight Brokers Association shall be interested in any subsidiary company; agreeing that no person shall be a member of said Steamship Freight Brokers

tion unless he is engaged solely in the steamship brokerage or forwarding business."

The equity suit is sought not only dissolution of the American Freight Brokers Association and of the Trans-Associated Freight Conferences, but the court is asked to stop by injunction all the illegal and objectionable practices enumerated and complained of. Attached will be a copy of the indictment and to the dissolution petition as an exhibit. It is a copy of the constitution and by-laws of the American Freight Brokers Association, which substantially contains several "agreements" enumerated.

Less than two months later, the District Court gave its decision in favor of the defendants finding the Government's case unfounded.

Agreements between Steamship companies and railroads. In this connection, agreements made between steamship companies and railroads should be discussed. The Annual Report on steamship Agreements and affiliations of American Foreign and Domestic Trade prepared by Dr. S. Huebner, in 1914, devotes an entire chapter to this phase. At that time it was found that New York, Mobile, New Orleans and Galveston were apparently "open ports,"

thereby, ports where, as far as steamship lines and railroads were concerned, no special agreements existed. Only all other Atlantic, Gulf and Pacific Ports registered the existence of such agreements. Some of these agreements were only preferential, others exclusive in nature. The *Report* claims that many of the so-called preferential agreements were actually exclusive, having been put in a thin mantle of disguise so as to comply with the requirements of an Interstate Commerce Commission of 1912.

Advantages of conferences.—The advantages and disadvantages of steamship conferences, as seen from the point of view of both the shipowner and the shipper, have been carefully analyzed by the expert adviser of the United States House Committee on the Merchant Marine and Fisheries, Prof. S. S. Huebner. We shall give here merely a short summary of Professor Huebner's statement.

Agreements are said to have resulted in improving the service rendered by the steamship lines. These improvements consist mainly in greater regularity and increased number of sailings and in the instalment of faster and safer vessels. Greater regularity brings several advantages to the shipper; he needs less stock, does not have to engage cargo space long in advance and can enter forward contracts for the delivery of his goods at a definite date. The greater speed and safety of the vessels bring lower insurance rates and reduce the loss of interest on the cargo while in transit.

Stability of rates.—Stability of rates over long periods of time is the next favorable result of steamship conferences. The speculative risk which exists under the system of open competition is eliminated. It enables the shipper and merchant to calculate to a nicety this element of cost. Three factors assure the shipper reasonable rates: (a) lines cannot afford to charge rates detrimental to the development of the traffic; (b) competition of lines serving the European merchant between the same ports to which American shippers trade, serves as a constant check on rates from America; (c) tramp competition holds down liner rates.

Less discrimination.—It is furthermore claimed that the conference establishes uniform rate charges, the small

shipper being treated in the same way as the big one. Under the system of open competition the powerful shipper could play one line against the other and thereby obtain preferential rates. The conference, on the other hand, has no special interest in showing favors to big shippers, especially when earnings are pooled irrespective of the amount of business done by each line.

The rate wars common under open competition often result in the survival of the strongest and the elimination of the weak lines; but agreements, particularly pools, tend to compensate weaker members for their inability to obtain a large portion of the more remunerative trade.

Sounder rate policy.—While the standard of service rendered by the conference lines has improved, certain reductions in the cost of the service, made possible by the conference, are said to result in an ultimate reduction of freight rates. Wasteful competition is eliminated, and the aggregate cost of the service rendered by all the lines is accordingly reduced. Furthermore, the cost of service can be more economically distributed so as to develop the trade. Rates may be reduced on certain articles, compensation being found in increasing the rate on other items. Lines can view the trade "not only as it is, but also as it may become." Ports can be developed which otherwise would be neglected.

Judge Alexander, the former Secretary of Commerce, who presided over the Shipping Investigation, summed up the situation in a recent report with the words:

"Steamship line representatives, as well as the patrons of the lines, were almost a unit in emphasizing to the committee the importance and necessity of the aforementioned advantages of agreements and conferences."

Need of effective control.—But the report also added: "While admitting their many advantages, the committee is not disposed to recognize steamship agreements and conferences unless the same are brought under some form of effective government supervision. To permit such agreements without government supervision would mean giving the parties thereto unrestricted right of action. Abuses exist, and the numerous complaints received by the committee show that they must be recognized. In nearly all the trade routes to and from the United States, the conference lines have virtually a monopoly of the line service."

"The committee believes that the disadvantages and abuses connected with steamship agreements and conferences as now conducted are inherent, and can only be eliminated by effective government control; and it is such control that the committee recommends as the means of preserving to American exporters and importers the advantages enumerated, and of preventing the abuses complained of." In other words, it is proposed to apply to combinations in the ocean carrying trade similar principles as we find governing the legislative treatment of the railroads. Combination is permitted, but subject to control.

Disadvantages of conferences: monopolistic tendency.—Without such control it is doubtful whether the advantages just stated outweigh the following disadvantages.

In the first place, the monopolistic nature of the steamship-line combinations is attacked. It is said that all combinations of private enterprises containing the germ of monopoly are apt to abuse their power to the detriment of the public, the primary aim of the conferences being to prevent the establishment of other lines

In a given trade. In so far as "fighting ships"¹ are used for the accomplishment of this aim, the shippers' contention finds support in the courts. These fighting ships are sent by the combination to take away the business of an uncontrollable competitor. They dock next to the competitor's ship and take freight at a lower rate than he could afford to grant. When the United States, just before the outbreak of the War, brought suit against the Hamburg-American Line and other foreign steamship lines, attempting to "break up an alleged combination of European ship-owning lines," the court refused to grant the principal relief asked for by the Government, but granted a relief against fighting ships.

The fear is expressed that although the monopoly of the lines may be limited at present, the combinations will become more powerful in the future and will gradually gain control over their specific area.

Shippers further object to the secrecy of most steamship agreements, especially to the refusal of the lines to publish their rates and tariffs.

In some cases it is claimed the lines have arbitrarily increased rates without giving the shipper due notice in advance. Shippers also argue that not all lines adhere to the principle of treating all shippers alike.

Deferred rebates.—Strong opposition is voiced against the deferred rebate system. Under this system, the line agrees to refund to the "loyal shipper," i.e., the shipper

¹ Defined as follows in *United States Shipping Act, 1916*, Section 14:

"The term 'fighting ship' in this Act means a vessel used in a particular trade by a carrier or group of carriers for the purpose of excluding, preventing, or reducing competition by driving another carrier out of said trade."

who patronizes the line exclusively with all his shipments in a given direction, a certain portion of the freight charges, usually five to ten per cent. This rebate is paid after periods of considerable length, in some cases as long as twelve months, and is therefore called a "deferred rebate."¹

Its general significance appears from the following finding of the British Royal Commission on Shipping Rings:

"That a conference making use of the system of deferred rebates possesses so far as the shipper of general merchandise is concerned, a limited monopoly, and that this monopoly is dependent upon the system of deferred rebates or some tie equally effective."

America forbids "deferred rebates" and "fighting ships."—Courts and Congress of this country have stamped this system of deferred rebates as an unlawful practice. The United States Supreme Court in its decision against the Hamburg-American Line and other North Atlantic steamship companies, handed down a decision in October, 1915, endorsing the recommendation of the Alexander House Committee referred to above, and declared against deferred rebates and fight-

¹ Deferred rebate is defined in the *Shipping Act, 1916, Section 14*, as follows:

"The term 'deferred rebate' in this Act means a return of any portion of the freight money by a carrier to any shipper as a consideration for the giving of all or any portion of his shipments to the same or any other carrier, or for any other purpose, the payment of which is deferred beyond the completion of the service for which it is paid, and is made only if, during both the period for which computed and the period of deferment, the shipper has complied with the terms of the rebate agreement or arrangement."

ing ships. Further, the Shipping Act of 1916 contains the following prohibition:

Sec. 14. That no common carrier by water shall directly or indirectly—

“First. Pay or allow, or enter into any combination, agreement or understanding, express or implied, to pay or allow, a deferred rebate to any shipper.

“Second, Use a fighting ship either separately or in conjunction with any other carrier, through agreement or otherwise.”

No such law exists on the statute books of England, our greatest rival. The Royal Commission on Shipping Rings (1909) expressly went on record as “not in favor of drastic remedies such as the abolition of the deferred rebate system.” The Cunard Line, unhampered by legal restrictions, not long ago published in all the leading trade papers of this country, an offer of rebate to all loyal shippers. The *Nautical Gazette*, for March, 13, 1920, contained the following announcement:

REBATE GRANTING LINES. Messrs. Larrinaga & Co., Ltd., of Liverpool, inform shippers that they will grant a rebate of 10 per cent. prime (when prime is charged) on all shipments (except such as may have been made under special contract) shipped by their steamers or by steamers loaded by them from the United Kingdom or the Continent to Havana, Matanzas, Santiago de Cuba, Cienfuegos, and other ports in Cuba. The rebates are, however, subject to the following conditions, and may be discontinued whenever notice thereof is given. They will be computed on June 30, 1920, and every six months thereafter, and be payable six months afterwards, but only to those shippers who have, up to such due date, confined their shipments from the United Kingdom, Germany, Norway, Sweden, Denmark, Holland, Belgium, France and Spain, to steamers loaded by the Royal Mail Steam Packet Company, the Compagnie Générale Transatlantique, Compañía Transatlántica de Barcelona, Cuban Line (Ernest Bigland & Co., Ltd.), Larrinaga & Co., Ltd., John Glynn &

Son, Ltd., G. H. Fletcher & Co., and W. L. Nickles, Son & Co., and have been in no way interested, directly or indirectly, either as principals or shippers, in shipments by any other vessel, either proceeding herself, or taking cargo by transhipment, to the above-mentioned ports. Shipments by the Ward Line via New York, and by steamers provided by Messrs. Fearnley & Wilhelmsen from Scandinavian ports, and by steamers of the Koninklijke West-Indische Maildienst, of Amsterdam, from Holland to the south ports of Cuba, will not invalidate the claim for rebate."

Difficulties of American shippers.—This situation puts the American shipper as well as carrier into a very unfortunate position. It appears that for a while no American ship was approved by the British conference, as under American laws deferred rebate cannot be paid and as the deferred rebate, in the opinion of many, is the corner-stone of the conference system. "Therefore, when our ships go to the Orient and a shipper has the temerity to ship cargo by our vessel, he will receive a notice from the British India or the P. & O., calling his attention to the fact that they are aware of his shipment and reminding him that it voids their obligation to pay him the deferred rebate. With such a large sum dependent upon it, it takes a considerable stress of circumstances for shippers to patronize an American ship at all." (Mr. Rosseter before Senate Committee on Commerce.)

This situation is further aggravated by the fact that the shippers who dare to face the anger of the conference lines are left without any service at all in the ports of the world where only foreign conference lines but no American lines exist. This is brought out by the following discourse which occurred during the hearings before the Senate Committee on Commerce relative to the "Establishment of an American Merchant Marine." (P. 1987 of the Report.)

SSETER. The next thing—and it has a bearing on the point I made some time back—is the necessity of a real world-wide service. I have also seen notes written by conference agents calling attention to the fact that it is known they are patronizing ships not in conference, and reminding the shipper that the next time he applies for an allotment of space in some service where American ships are operating he can whistle for it. In fact, I find it quite natural to give the preference to the shipper who is supporting their own line. Those who have seen fit to support an opposition line are even less likely to understand it will be to their prejudice. Thus it is impossible to provide world-wide service to protect those who patronize our ships.

RANSDELL. How are you going to overcome that?

HAIRMAN. I have been told this has occurred: If the British government of a shipper that is proposing to ship something to the United States in an American ship they tell him: 'If you do that you will not be allowed to do them for your entire service. We will not allow you to patronize our ships.'

SSETER. That is true."

Sosseter's conclusion is that the United States' choice of either providing world-wide service for all shipping interests and waging relentless war against the foreign conference lines, or else of legalizing the deferred rebate. His endeavors to aid.—Congress seems to be faced with the handicap which the discrepancies of the two systems to the American ship operators and shippers. The Shipping Board tried to meet the situation by fixing the original freight charges so low as to offset the effect of a differential. But such practices do not bring the desired results and always mean a loss.

It is therefore not surprising that both the House and the Senate are planning war against the deferred rebate. Representative George W. Edmond of Pennsylvania, early in 1920, introduced a bill in the House which proposes to deny entry into American ports to

foreign vessels granting rebates to their shippers. Senator W. Jones, Chairman of the Senate Committee on Commerce wanted to incorporate the same idea into the Merchant Marine Act, 1920.¹ But so far, it seems that our bark is worse than our bite. For when we come down from the pedestal of legislative superiority and face the cold facts, we seem to be quite kindly disposed toward these rebate-granting conferences.

America's attitude toward existing conferences.—For the present, the Shipping Board directs the policy of much of our shipping. Its attitude, so far, has been co-operation rather than "fight to the finish," as appears from the following clipping from the *Annalist* of May 24, 1921 (p. 695.)

"The American merchant marine, in its effort to win a place on the seas as a world factor, will co-operate with the foreign lines rather than engage in unrestricted competition. The Shipping Board, which will own and direct more than 2,000 oceangoing vessels when the building program is completed, has decided to enter into a working agreement with the foreign steamship lines, whereby there will be no throat-cutting competition. It has given its sanction to the plan of permitting its managing agents to participate in the steamship conferences which fix the freight rates that all lines must observe. Instead of bucking the other interests in the determination to keep the American flag merchant ships in the world trades, the Shipping Board has indicated its willingness to be governed by a common policy.

"The Shipping Board is technically not a member of any conference. While it does not enter into these pacts, the Government board sanctions this action on the part of its managing agents, the term by which a company to which the Shipping Board has allocated ships for operation is now designated. It is not singular that the foreign companies should desire to co-operate with the Government board in the matter of fixing ocean rates, however.

¹ See Chapter XXX.

"Because of the potential resources of the board the foreign lines were gratified to participate in a co-operative agreement. While the conference agreements are the latest developments, for more than six months in some routes there has been a close understanding. The foreign lines, with sailings from New York to the United Kingdom, held conferences during the morning of a specified date every month. The result of their meetings was forwarded to a similar conference, held in the afternoons of the same days by the Shipping Board managing agents. Invariably the rates at which cargoes were booked remained the same on all lines.

"How long this friendship will last, remains to be seen."

In the latter part of 1920, Mr. F. B. Mackay, Vice-president of the Barber Steamship Lines, spent several weeks in Europe in order to assist in the negotiations then going on with the principal British and continental Steamship conferences which were to bring Shipping Board tonnage into these conferences on equal terms with the other constituent lines. Upon his return, Mr. Mackay made the following statement:¹

"Arrangements were made, for shipping board vessels to get into some of the foreign conferences. Of course, our boats will have to take pot luck with the other lines and submit to the conditions under which the conferences are run. In meeting the owners composing the conferences I found they had no objection worth mentioning to shipping board boats coming into the agreements provided the shipping board and the operators were willing to conform to the rules and regulations observed by the other members.

"The principal difficulty was the rebate question. It came up in one instance and it was shown conclusively that the trade could not be held and run properly without this old-fashioned custom. *It was then agreed by the board at*

¹ *Nautical Gazette*, December 4, 1920.

Washington that American vessels could grant rebates in trades between foreign countries.

"Taken all 'round Capt. Frank E. Ferris of the shipping board and myself were well received. The foreign owners, taken as a body, will be glad to come to some amicable arrangement under which a large number of the shipping board boats will be taken care of whenever they are ready to come into the conferences.

Our Efforts Appreciated.—"I found in England a general willingness to appreciate the fact that our steel ships were built as a war effort for the purpose of feeding Europe. Of course, it was felt that the shipping board vessels, after having come into the conferences, would have to remain in and take the good times with the bad. In other words it would be expected that the shipping board would not lay off its vessels when they ceased to be profitable."

Regulated combinations versus wild competition.—To sum up this chapter we might conclude that such statements as that of Mr. Rufus Hardy before the Committee on the Merchant Marine and Fisheries, that "the day of competition on the ocean is gone, that combination has taken its place," should be accepted with reservations. It was shown that many agreements do exist among former rivals, and that in rare instances competition has actually been replaced by combination. But it is also true that competition in rate making has been replaced by competition in service, and that as yet no combination has been found strong enough to overcome the force of competition innate in the nature of shipping. The slogan is not "combination *versus* competition," but "regulation *versus* wild competition."

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PART VIII
RATES AND FINANCES

CHAPTER XXV

THEORY OF RATE-MAKING

Theory and practice of rate-making contrasted.—A theoretical analysis of rate-making is concerned with the influences which affect the general level of freight rates and passenger fares, rather than with the detailed considerations which determine the fixing of the rate charged for a specific cargo to be carried in a given vessel over a particular route. Having in mind this distinction between theoretical and practical rate-making, we may say that in theory rates move between two points, the minimum rate, which is determined by the cost of transportation, including direct operating expenses as well as overhead and fixed charges, and the theoretical maximum, which is set by "what the traffic will bear," or, putting it differently, is reached at the point when too heavy charges discourage transportation to such an extent that the net profit suffers. Between these two points the forces of supply and demand determine what charges are to prevail in a given market at a given season for different kinds of ships and different services rendered. To be sure, at times charges may fall below the theoretical minimum, as, for instance, in the case of rate wars where "fighting ships" are being employed, or when a ship offers "distress space," or, in turn, they may rise above the theoretical maximum because of imperfect calculations on the part of the traffic manager responsible for freight rates. Also the working of the laws of supply and demand may be interfered with, and are frequently interfered with through rings, pools, agreements, etc., as we have seen in previous chapters.

Cost analysis of steamship operation.—We take up the matter of cost first. To ascertain the cost of steamship service, expenses may be divided into three classes, on the basis of the relative exactness with which these expenses vary as the traffic varies. The concept of traffic involves both the quantity of cargo and the length of the haul. Expenses which vary most closely with the intensity of the traffic may, therefore, be subdivided into those whose variations are caused by changes in the quantity of cargo carried and those due to differences in the haul. On this basis expenses may be divided as follows:¹

- 1. Expenses depending most nearly upon the amount of operation performed.**
 - (a) Operating expenses varying with the length of the haul, fuel, wear and strain on machinery and vessel (so far as due to use), wages of seamen (to a certain extent).
 - (b) Operating expenses varying with the amount of cargo; cost of loading, unloading and transhipment.
 - (c) Operating expenses varying with traffic intensity in general, pilotage, wharf charges, towage, hull insurance, commissions to ship brokers, rebates, etc.
- 2. General expenses, not varying with the volume of traffic but incurred only as long as operation proceeds, such as salaries to ship's officers, expenses for general oversight, freight soliciting, cleaning of hulls, a part of general repairs, etc.**

¹ Adapted from H. G. Brown, *Principles of Commerce*. Part III, pp. 5ff.

3. Fixed charges, that is, charges which must be met regardless of operation, such as taxes, interest on borrowed capital, depreciation (partly), etc.

Vessel types and cost.—The relative significance of these various expense items is not the same for all ships, but depends upon a large number of factors. In the first place, it varies with the type of vessel, though not as much as one might assume. In the case of a sailing ship the fuel item, of course, disappears entirely, and its operating expenses in general are very low. But sailing ships represent also less sunk capital. If we compare the expenditure incurred in operating a sailing ship with that of an express steamer we find that the sunk cost per unit—say, per gross registered ton—is a multiple in the case of the express steamer of what it is in the case of the sailing ship. But so are operating expenses per ton mile. The question is simply which of the two items increases more rapidly.¹

Effect of age.—Secondly, the question of age enters into the calculation of cost. An old ship whose original cost has been written off will show a low percentage of fixed charges. In this connection it is of interest to point out how the different nationalities stand in this respect. The United States probably has the youngest merchant marine, over 85 per cent of her oceangoing ships having been built since the outbreak of the war. England is probably second, for not only are shipbuilders busy in replacing British submarine

¹ According to Captain Paul Foley, Director of the Division of Operations of the Shipping Board, the operating expenses of the Board's vessel fleet can be apportioned as follows: Fuel cost, 43 per cent; repairs, 30 per cent; wages and overtime, 15 per cent; subsistence, 5 per cent; stores 7 per cent. (*Nautical Gazette*, February 12, 1921, p. 219.)

losses, but it has always been a feature of British maritime policy to dispose of her oldest ships to rival nations, particularly the Scandinavian. The following chart proves our statement:

TONNAGE OF LEADING MARITIME COUNTRIES FOR 12 MONTHS ENDING JUNE 30TH, 1914

	Tonnage Added	Proportion of New Vessels	Tonnage Deducted	Proportion Vessels lost Broken Up, Etc.
United Kingdom.....	Tons Net 955,000	Per Cent 97	Tons Net 621,000	Per Cent 24
Germany.....	387,000	85	86,000	33
France.....	137,000	61	38,000	58
Italy.....	137,000	12	32,000	66
Norway.....	152,000	59	37,000	49
Sweden.....	66,000	62	17,000	53

The War has changed this situation considerably. On the one hand, England could not afford to sell much tonnage old or new, to anyone; on the other, the merchant marine of the United States contains a larger proportion of new vessels than at any previous time. This situation is causing considerable worry on the other side.

It is stated that a large proportion of the Japanese merchant marine consists of very old ships, some of which are barely seaworthy. Of course, what counts in the cost calculation is not so much the actual age of the ship as the length of time expired since the present owner acquired the ship and the extent to which he has written off the purchasing price. But in normal times the purchasing price in turn reflects the age of the ship.

Corporate financing and cost.—Another factor which

influences the relative significance of the three groups of expenses is the method of capitalization. The International Mercantile Marine Company, with its heavy bonded indebtedness and a large amount of cumulative preferred stock outstanding, is an example of the extent to which the manner of capitalization can affect fixed or quasi-fixed charges, and thus the entire relation of the different expenses to each other.

Furthermore, the nationality of a ship has an effect upon the distribution of expense, owing to differences in the wage scale, in subsidies, in various laws or national customs regulating the practice of depreciation charges, etc. Again, the voyage to be undertaken has a bearing upon expense, since terminal charges, fuel expenses and insurance rates differ considerably in different parts of the world.

Other factors influencing cost.—Other factors entering into the equation are the speed required or desired, the fuel available, the technical and nautical peculiarities of a given ship, canal dues, and finally the climatic, geographical, commercial and political conditions prevailing on a given trade route.

All these factors have been considered in the following analysis of costs prepared by the Division of Planning and Statistics of the United States Shipping Board. We have extracted this particular analysis from a valuable study entitled *The Relative Desirability of Ships Operating on Four Trade Routes*:

**ANALYSIS OF COSTS OF STEAMSHIP OPERATING
BETWEEN NORFOLK AND VALPARAISO
(8,900 KNOTS)**

ow to calculate the profitability of a service.—We said before that the cost incurred in rendering the service of transportation determines the minimum rate which must be charged. The next question is: What quantity must be carried or what volume of traffic is needed to make a shipping enterprise pay? In order to satisfactorily answer this question we divide the vessel into "capacity units." We choose the deadweight ton (2,240 pounds, or 40 cubic feet) knot as our "capacity unit." When filled with cargo moved for the purpose of transportation this "capacity unit" becomes a "production unit." This unit is the cargo-knot. The question is now reduced to a simpler form, namely: how many "capacity units" must become "production units" to repay expenses, or assure minimum profitability. But profitability depends on the ratio of receipts to expenditures. So the next step is to reduce all receipts and expenditures (per annum or per round trip) to these units. Consulting the Shipping Board cost analysis given above, we find that annual expenditures are given "per cargo-ton mile" and are found to vary in the case of full cargoes each from \$.00052 to \$.00089. The expenditures per cargo-knot increase as the amount of cargo carried decreases, to use the terms introduced before, as the number of "capacity units" which become "production units" decreases. In our cost analysis the highest point is reached at \$.00159. The rate of increase of expenditures per cargo-knot depends upon the ratio of fixed charges plus general expenses to total expenditures. The greater these charges in proportion to the total expenditure, the more rapid is the increase of expenditures per cargo-ton mile with decreasing supply of freight offering.

An attempt has been made to express, by means of a

mathematical formula,¹ the relation in which these various factors stand to each other. The formula follows:

Let C (Cost) equal fixed charges plus general expenses per nautical mile;

Let c (cost) equal operating expenses incurred in operating one "capacity unit" (D. W. ton) :

Let R (Receipts) equal receipts per "production unit" (cargo ton);

Let x equal the number of "capacity units" which must be turned into "production units" in order to make the enterprise pay.

$$\text{Then } \frac{C}{x} + c = R; \text{ or } x = \frac{C}{R - c}$$

In other words, the lowest number of "capacity units" which must become "production units" in order to make a shipping enterprise pay is equal to the amount paid in the form of fixed charges and general expenses per nautical mile divided by the receipts per "production unit" minus the operating expenses incurred in operating one "capacity unit." x indicates the "point of minimum profit from operation."

The question of "laying up."—The next question is: What quantity must be carried to avoid "laying up?" A ship while idle is a liability; apart from the cost of upkeep, an idle ship means loss of interest on the invested capital. Depreciation also goes on. Therefore, it is good business to keep a vessel going not only up to the point where the owner breaks even, that is to say, when receipts defray expenses and leave the owner a reasonable return on the invested capital, but even beyond that point. The ship should be kept going as long as the loss during operation is less than the loss suffered from "laying up." The point,

¹ See P. Lenz, *op cit.* p. 4.

reached just before the ship must be "laid up," may be called the "point of maximum loss from operation."

Traffic intensity.—The reverse would be the "point of maximum profit from operation." This is naturally reached when the vessel is kept going continuously, fully loaded with best paying freight in both directions. We may distinguish a relative and an absolute maximum. The former refers to the largest possible gain which can be made with a given investment (one ship, two ships, a small ship, a large ship, etc.), while the latter assumes that the tonnage supply on a given route has been expanded or the investment been increased, so as to provide sufficient carrying capacity for all the cargo offering. Or to put it differently: the relative maximum is limited by the vessel tonnage put on a certain route, while absolute maximum profit is limited only by the amount and nature of the cargo offering. In a way even that is not an absolute quantity, as it changes with the cost of transportation, the rate charged, conditions in competitive countries, etc.

The significance of the load index.—In our previous calculations we have considered the profitability of complete round voyages and of all the voyages performed during one year, without separately considering the two distinct services which make up each round trip—the outward trip and the home voyage. For the financial result of a year's performance it may be of little consequence whether a ship goes half filled both ways, or fully loaded one way and in ballast the other (assuming that the full cargo one way nets the same revenue as the two half cargoes). But for the steamship man whose natural endeavor is to secure as much cargo as possible for both the outward and the homeward trip, a careful analysis of the cargo offering in either direction is of the greatest importance. In other words, we face

the problem: What effect does the load index (See Chapter II) have upon rate-making? We have said that a vessel will operate at maximum efficiency and at the lowest cost per cargo-ton knot if it can secure a full cargo each way on every trip. The load index may fall short of this ideal in two general ways; there may be enough freight in one direction to furnish full loads, but not enough in the opposite direction to furnish more than partial loads, or the freight may be offered so irregularly in either or both directions that the loads vary throughout the season.

Consequently a ship can afford to accept lower rates for carrying goods to a place where, and at a time when, a return cargo may be secured than to a place which offers no return shipment. A few examples may illustrate this.

"The ports on the Pacific Coast are desirable destinations for sailing vessels expecting to reach that coast in the fall and early winter, for there at that time a supply of wheat and barley is ready for shipment to Europe. The same applies to other ports which are outlets for surplus crops.

"Early in April, 1907, a steamer was chartered to carry a cargo of general merchandise from New York to Australia and New Zealand, the rate named being 31 shillings per ton. About two weeks later another vessel was chartered to make a similar voyage for 28 shillings 6 pence per ton. This reduction was due partly to the fact that the second vessel was expected to reach its destination when the prospects for securing a return cargo were more favorable than for the other vessel. The first ship was to leave New York in April or May: the second was chartered for late in May."¹

Statistical proof.—The effect of cost on freight rates is best determinable from a long-range view. The period from 1876 to 1906 brought a fairly constant and considerable decline in ocean freight rates. The cause of these reductions, while partly due to the change in the purchasing power of money, was largely connected with improvements in the construction of vessels and with economies effected

¹ Frank Andrews, *Ocean Freight Rates*, p. 8. See also Chapter XII.

ip operation and cargo handling. The greater volume regularity of trade also contributed to the general result ducing the cost of transportation. Undoubtedly the law iply and demand likewise affected the rates.

The following table shows that ocean freight rates drop- from 1884 to 1903, very much more sharply than the ral price level during the same period:

OCEAN RATES OF FREIGHT, INWARD AND OUTWARD

tement showing the percentage fluctuations in mean yearly freight between the United Kingdom and certain ports abroad during each years, 1884 to 1903, as compared with mean rates for the year

The percentage fluctuations in wholesale prices of commodities ded for comparison. (1900 figures equal 100 per cent.)

Year	OCEAN FREIGHT RATES		Mean of Preceding Columns	Index Number of Wholesale Prices of Commodities.*
	Inward	Outward		
.....	121.7	110.7	116.2	106.1
.....	106.9	101.0	104.0	99.8
.....	98.0	105.0	101.5	94.4
.....	94.6	105.6	100.1	92.2
.....	107.3	114.0	110.7	95.3
.....	125.4	119.2	122.3	97.1
.....	102.8	110.5	106.7	99.5
.....	104.4	95.5	100.0	101.1
.....	84.3	89.3	86.8	96.3
.....	84.8	82.3	83.6	94.6
.....	81.2	78.3	79.8	90.3
.....	74.8	75.7	75.3	86.8
.....	82.8	76.0	79.4	83.9
.....	81.8	84.0	82.9	85.7
.....	96.5	88.9	92.7	88.5
.....	83.7	91.7	87.7	89.5
.....	100.0	100.0	100.0	100.0
.....	89.1	80.8	75.0	95.2
.....	85.2	76.1	70.7	94.7
.....	66.6	78.9	72.8	94.4

* "Report on Wholesale and Retail Prices" (House of Commons, No. 321, of 1903), p. 34. The figures have been converted to the of 1900 as the standard year.

Cost factor not generally felt.—But beyond such a general movement the effect of cost on ocean transportation is not, as a rule, easily traced. On the contrary, cases may be cited where the distance covered by steamers plays a relatively unimportant part in the calculation of freight rates. If the cost decided the rate, a higher rate would have to be charged for a longer haul; but this is not the case. The same charges often prevail to ports whose distance from the point of shipment varies by hundreds of miles. We have referred in a previous chapter to the so-called "range" clauses attached to charter parties, which mean that the same freight rates are paid by the shipper to a number of European ports, or to any port, say, between Baltimore and Boston when destined for America.

Competitive nature of ocean rates.—Mr. Lawrence K. Sherman, Vice-President of W. R. Grace & Company, described the situation well when he said:

"Ocean rates are not a question of cost and distance. They are a question of competitive conditions. The field is wide open and you have to make rates that will get the business."

Another reason why rates are not changed in proportion to distance is the relative importance of terminal expenses, which in some cases exceeds the cost of the haul. Again, frequently, two steamers compete for the same traffic having entirely different operating expenses, but the costly steamer, if it wishes to get the freight, cannot charge more for equal service than the cheap vessel. A good example of this is the traffic in the Pacific Ocean. Here expensive American steamers compete with Japanese steamers, which, beside being often more cheaply built and invariably more cheaply operated, are subsidized by the Japanese government. That government in turn assumes the right to regu-

: all inward and outward rates on the products of Japan. regulates the sailing dates and routes of subsidized boats the rates which these boats may charge for export and import cargo, being guided mainly by the desire to build the foreign trade of that country. All other boats which compete with these Japanese lines have to adjust their rates to the standard set by the Japanese government. is, the item of competition wholly overshadows the consideration of operating expenses in the determination of rates. Naturally, the desire to come out ahead being the prime consideration in the steamship business, as in all business, the general average of rates charged cannot for length of time fall below the minimum set by the operating expenses; but in individual cases other factors are of some importance in the setting of rates.

Charging "what the traffic will bear."—We have seen it determines the minimum of rate and now turn to a discussion of the maximum. The shipowner's aim is naturally to receive as large a sum over and above the minimum as possible. How far he can go depends upon the degree of competition to which he is exposed and upon the relation of supply to demand; where competition is eliminated permanently or temporarily, either by agreement or by complete control through ownership.

The shipping company in this case charges "what the traffic will bear." It is a difficult and complicated task to determine this. Innumerable factors affecting production as in different centres of the commercial world have to be considered, whose analysis requires an equally thorough knowledge of economic geography, the international wage scale, tariffs, and rail and water rates from and to all the competitive points.

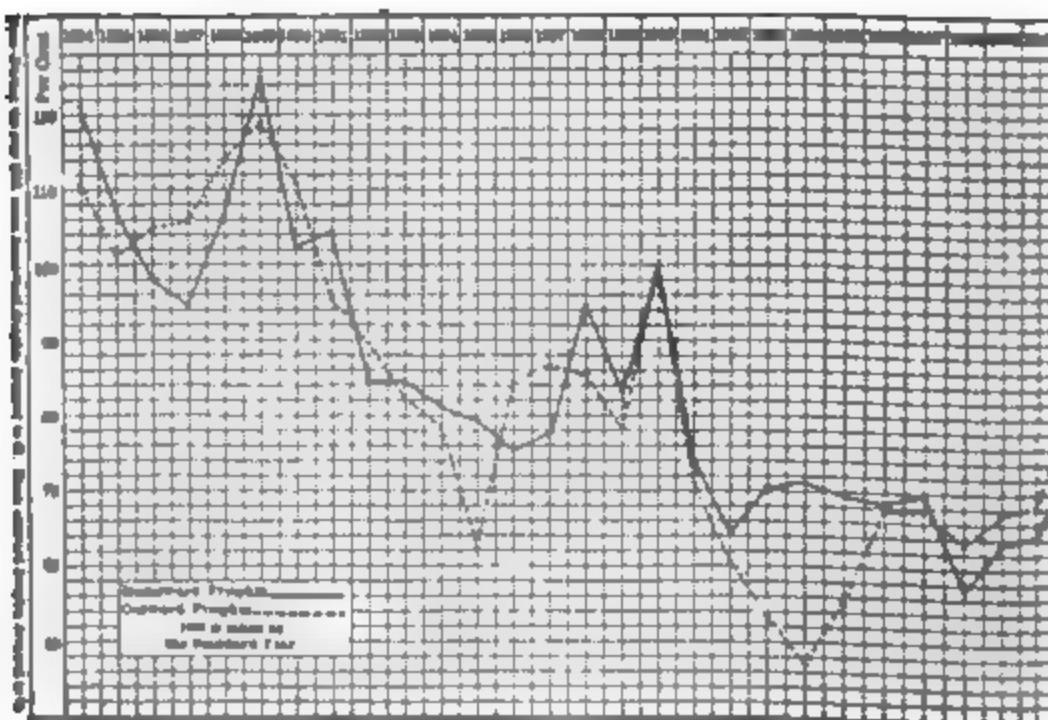
A thorough understanding of all these factors frequently

precludes the charging of exorbitant rates, as appears in the following statement made by P. A. S. Franklin, President of the International Mercantile Marine Company:

"The safety valve against the charging of exorbitant freight rates is in reality the lines' own interest to do everything in their power to foster trade, and to do nothing which would have a tendency to restrain it."

Absolute monopoly unlikely, therefore violent fluctuation of rates.—At any rate monopolistic control is the normal condition prevailing in ocean trading. Usually competition exists and holds the door open for the entry of the restricting influence of supply and demand. The result is that ocean rates fluctuate violently—charter rates only more so than liner rates. The following chart, taken from Kirkaldy, *The British Shipping Industry*, gives fluctuations in mean yearly freight rates from 1884 to 1913.

FLUCTUATIONS IN MEAN YEARLY OCEAN FREIGHT RATES
(Based on calculations of British Board of Trade)



This chart, representing general means, reflects only imperfectly the wide range of fluctuations, which is the second characteristic of ocean rates to be discussed. The general eight level shows only the effect of great events, such as the British Engineers' strike of 1897, the Spanish-American War and the South African War. The high rates of 1898-9 left shipbuilding yards feverishly busy. In 1900 the new tonnage flooded the market, and its effect was accentuated by the release of ships chartered by the British government for the Boer war. Hence the depression after 1900. The large increase in freight rates since 1908, particularly since 1911, is due to various strikes, such as the British coal strike of 1911, to the closure of the Dardanelles during the Balkan wars, with its effect upon insurance rates, and particularly to the abstention on the part of British shipbuilders during the preceding period of depression.

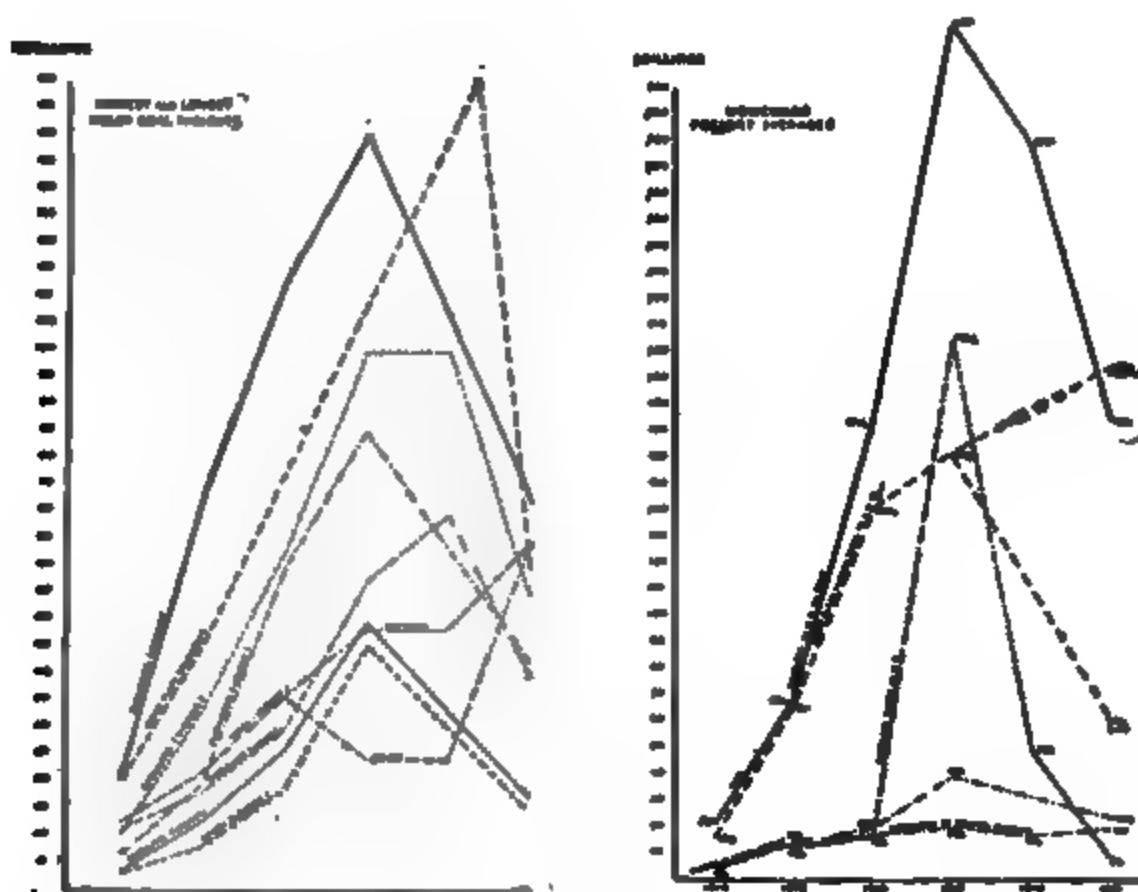
Charter rates fluctuate most.—The nature of the charter traffic causes the rates to fluctuate more widely than the liner rates. Sometimes within a week or two the charter rates in a given direction will rise three hundred per cent. This extraordinary degree of fluctuation is due to the fact that charter rates depend more intimately upon supply and demand than perhaps any other prices that can be named. If a shipper is bound by contract to ship a certain cargo at a certain date, only the ships that happen to be at hand at the time are available; all other ships, even those that are only a relatively short distance away, do not exist as a possible supply. This relation between the urgency of making a shipment and the impossibility of adjusting the supply of vessel tonnage with sufficient promptness to the existing demands makes the charter rate a marginal rate. That is to say, if the amount of freight calling for shipment exceeds the amount of vessel tonnage offered, this excess freight,

representing the margin, cannot be shipped at all. It is, therefore, the fear on the part of the shipper of being left altogether without shipping facilities that enables the carrier to charge a rate far in excess of that which might have prevailed only a few days earlier, in the same locality, when the relation between the freight and space was different.

Just as the urgent demand of the shipper for space at a given time drives freight rates to abnormal heights, so the opposite is the case when a steamer is embarrassed for a cargo. Here the limitations placed on the cheapness of water transportation manifest themselves. The boat must be filled, the operating costs being the same whether ten or ten thousand tons are carried. When, therefore, a steamer has been disappointed in its expectation of filling up, it will take freight for extremely low rates rather than go out half empty. It is then said that the boat offers "distress room." Such cases occur frequently in the regular line business, but are even more common in berth traffic. A carrier, in his anxiety to fill space left vacant by belated interior freight, negotiates for "spot cargo," and the shipper, taking advantage of the carrier's anxiety, squeezes out a low rate.

Effect of the war on rates.—The influences which affect supply and demand are too numerous to permit of a detailed analysis, but, in general, we may say that the volume of ocean space per tonnage available in a given trade is subject to increase in at least two ways: first and most important, by the building of new tonnage in excess of losses; secondly, by releasing a number of ships from one branch of the traffic to place them in another. Decreases, on the other hand, are generally due to vessels being attracted from the trade in question. Maritime disasters play a relatively small part. Wars play a very important part

in reducing the supply of tonnage and lead to excessive rate increases. The following charts¹ show the effect of the European war on freight rates:



RATE FLUCTUATIONS DURING THE WAR AND AFTER
From Annual Report Chamber of Shipping of the United Kingdom

Effect of crops on rates.—The demand, on the other hand, is subject to a different set of variations, among which the conditions of harvests in the various regions of the world are the most important.

"Poor crops tend to bring rates down, while, on the other hand, abundant harvests promise higher freight rates, which

¹ From *Annual Report* of the chamber of Shipping of the United Kingdom 1919, 1920, pp. 153 and 155.

may be still further increased if the traffic in some articles causes another strong demand for 'ocean' just about the time the produce of the harvest is shipped.

"Another instance of a considerable supply of 'room' being thrown upon the freight market was aff in 1903, when the wheat harvest in Australia failed. When the wheat was still standing in the fields a number of vessels started for Australian ports to carry a share of the expected wheat surplus to Europe. Meanwhile unfavorable weather conditions resulted in a crop failure and grain cargoes from Australia were scarce. A considerable number of ships were unexpectedly thrown out of employment. Some of them sailed to the Pacific coast of the United States for loading wheat or barley, while others went elsewhere in search of cargoes. This condition no doubt contributed toward reducing the mean rate of wheat between San Francisco and the United Kingdom from about 32 cents per bushel in 1902 to about 18 cents in 1903."

"The rates which had declined at the close of the South African war continued rather low until the big harvest in the United States in 1905, when there was a revival in the demand for ships for charter, especially on the Atlantic board. It had been reported that the charter traffic had entirely died out at the four largest ports along the North Atlantic coast, but in the fall of 1905 there was a considerable number of grain charters made from Baltimore and Boston."¹

¹ Frank Andrews—*Ocean Freight Rates*. pp. 7, 8.

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CHAPTER XXVI

RATE PRACTICE AND RATE CONTROL

Negotiating charter rates.—In a previous chapter discussed rate-making only in a general way and from theoretical standpoint. The principles laid down in chapter are subjected to many modifications when applied to actual cases. These modifications are relatively few in number. The problem of rate-making is that of fixing charges for transportation of a full vessel cargo, composed of a single commodity. This is comparatively a simple matter. The rate charged for the use of the boat is almost entirely a matter of supply and demand and of bargaining ability on the part of the two parties involved in the deal.

Mr. Ruggles in a report to the Shipping Board on methods of rate fixing corroborates this view: "When the problem of rate-making is that of fixing charges for transportation of a full vessel cargo composed of a single commodity to be transported to any given destination by a ship whose size and speed are known, and when the normal capital costs and operating expenses of a vessel of the class to which the ship in question belongs are known, the task is comparatively easy. If the cost of freight have previously been worked out for vessels of the class to which the ship being considered belongs, it is necessary only to calculate the expenses for the time which will be consumed in making the voyage, including time spent at terminals, and to divide the total capital costs and operating expenses by the number of tons or number of units of cargo, and the quotient will be the freight rate cor-

inding to the costs of the service." The amount which e ship-owner can charge above this figure, depends on e market conditions.

Complexity of rates on general cargo.—An entirely different question is that of fixing rates applicable to "general cargo." This term, as we have seen, includes a wide variety commodities, each of which possesses its own intrinsic culiarities; they may be shipped singly or in large numbers, or packed in a great many different ways. The prob-n of rate-making thus becomes an extremely complicated tter.

When we come to apply our rate theories to actual cases, we find it neither possible nor desirable to use the cost of e service as a basis of rate calculations. In the first place, is task would overtax the capacity of the most skilful cost countant. "The ascertainment of the costs of individual nsportation services increases in difficulty, at more than proportionate ratio, with the increase in the number and riety of services performed by a carrier, whether by rail-ad or ocean vessel. The costs of service assignable to the several dissimilar articles can only be approxi-ately determined, and resort to estimates and to arbitrary les for the allocation of costs is necessary in working out a schedule of freight rates based on the costs of service. It the fact that perfection cannot be achieved is never a reason for not seeking to secure the best obtainable results; and this rule of conduct holds true of efforts to determine eight rates corresponding to the costs of service.

"Having ascertained the aggregate income which a given vessel carrying mixed cargo must secure to meet the costs and expenses of a voyage or of the period of time required to perform the services for which charges are to be levied,

the rate-maker must allocate the total amount among the several commodities by considering the space occupied by the different articles, their relative weights, their liability to damage, and, in short, the various factors affecting relative costs of service. The judgment and expert knowledge of the rate-maker, rather than accounting or other rules, must often determine the decision reached. Moreover, as is well known, the rates finally decided upon must necessarily reflect differences in the value of the commodities, as well as dissimilarities in costs of service, if the rates are to be equitable to shippers and are to be in harmony with industrial and trade requirements. The cost of service, as a basis of freight rates, has its limitations."¹

Undesirable to base rate on cost.—Secondly, it would be utterly undesirable to base the rate charge for carrying a particular commodity or even a particular shipment on the basis of the cost of the service rendered. It would be neither wise nor equitable to do so. It would be unwise because bulky products of low value would be overcharged, in many cases excluding them from the possibility of ocean transportation. On the other hand, articles of high value would pay considerably less than what their price would permit. Therefore, the value of the commodity and the value of the transportation service to the shipper rather than the cost of the service rendered, is emphasized in fixing liner rates. Besides, differentials, risks of transportation, perishability of commodities, and other physical and intrinsic characteristics affecting the classification, packing, handling and other incidents of transportation, are to be considered. It is an extremely delicate task to fix the rate on hundreds or even

¹ Ruggles in *Report to Shipping Board on "Ocean Rates"* by Emory R. Johnson, p. 56ff.

sands of commodities, striking in each case the happy medium which will assure the carrier a fair profit in the absence of competition and encourage the shipper to build up a large and permanent trade.

The rate problem of the liner is very similar to that of the railroad companies and what applies to the latter also holds true of the former. We can, therefore, benefit from the existing general rules laid down for the railroad traffic carrier.

To estimate the ability of an article to pay freight, a thorough knowledge must be had of the costs of production, the market prices at different points, and of the nature of demand for the article-whether the article is considered a necessity or whether some other commodity can readily be substituted for it. The service of freight transportation consists of taking goods from the producer or maker to the consumer and the person who fixes the rates for that service must consider the conditions of production and the nature of the consumer's market. Transportation charges must be such as will produce a net revenue for the carrier and will stimulate the development of traffic.

Actual rate based on four considerations.—"In general, it may be said that the decisions of a traffic officer with respect to rates are the resultant of four forces: (1) The rates he makes must have a proper relation to those made by competing roads and routes, and in spite of railway regulation there is much actual competition in the transportation business; (2) the interest of the shipper must be considered, what he can pay for transportation and what rates will permit his industry to flourish and the traffic of the railroad to increase; (3) the revenue of the railway must be safeguarded. As far as it is practicable, each par-

ticular rate must cover operating costs and contribute something toward fixed charges and profits, while the rates as a whole must surely be kept on a level that will maintain the company in a prosperous condition. (4) The requirements of the public as a whole must be complied with.¹

Rate policy and stowage plan.—An important consideration which affects the rate policy of a steamship is the desire to secure a load which uses the ship's space with maximum economy and produces the maximum revenue. We have seen that a mixed cargo is better than a homogeneous one. Among the manifold classes of general freight are some which "weigh more than they measure" others which "measure more than they weigh." A desirable cargo is one which consists partly of "deadweight," that is heavy cargo, and partly of light or measurement cargo. The combination of these two kinds of cargo which nets the largest revenue is called in the vernacular of the shipping man the "payable tons."² This varies with every voyage according to the kind of cargo offering, weather conditions etc.

The rate charged for a given commodity is therefore largely dependent upon the way it happens to fit in with the rest of the general cargo which a traffic man is trying to mould into a safe and paying load.

How a steamship company uses its rate policy to bring about this effect was explained by R. P. Schwerin, then vice-president of the Pacific Mail Steamship Company in his testimony before the Senate Committee on Interoceanic Canals, when he said:

"Naturally we would go after the best package or best

¹Johnson and Van Metre, *Principles of Railroad Transportation*, p. 357.

²R. E. Annin, *Ocean Shipping*, p. 150.

ying class of freight first and establish a service of volume and regularity that would take care of all the freight offering; we would hold up our rates as high as consistent with the filling of our ships with the class of cargo that we wanted and at times reduce it to induce movement of tonnage in case there was a shortage. If too much freight were offering, we might raise the rate on iron in order to take a larger portion of general merchandise. If general merchandise were not offering we might lower the rate on iron to fill the ship. This is the general policy pursued."

A practical application.—This problem of cargo selection can best be explained by citing a practical case.¹ Take a boat of 7,300 D.W.T. which requires for its trip 1,300 tons of fuel, water and stores, leaving a net cargo capacity of 6,000 tons. The space available for general cargo is 10,000 cubic feet. That means that the cubic capacity of the ship is 125 per cent of her weight capacity. For 6,000 tons deadweight would give at 40 cubic feet to the ton only 10,000 cubic feet. 300,000 cubic feet are 25 per cent more. As far as the rate is concerned it follows that the vessel will get the same revenue whether her freight be charged at a given rate per 2,240 pounds or at a rate of 20 per cent lower per 40 cubic feet. In other words, 6,000 tons weight at \$30 per ton weight will give the same result as 7,500 tons measurement at \$24 per ton measurement. Mr. R. E. Annin makes this point considerably clearer by showing the result of several cargoes upon the loading of the ship and upon the revenue obtained. He first takes the case of a cargo of copper, measuring 10 cubic feet to the weight ton. All the ship could take would be 6,000 tons which would fill only

¹ Adapted from R. E. Annin, *op. cit.*, p. 148ff.

one-fifth, 60,000 cubic feet of the available space of 300,000 cubic feet. At \$30 a ton, the revenue would amount to \$180,000. A cargo of cotton gives an entirely different picture. Ordinary cotton stows about 125 cubic feet to the ton, density cotton about 90 and high density as low as 80. We assume a cargo of density cotton. 300,000 cubic feet equal 7,500 measurement tons of 40 cubic feet each; at \$30 a ton they would net a revenue of \$225,000. But these 7,500 measurement tons would weigh only 3,333 weight tons thus utilizing only a little over half the deadweight capacity of the vessel. A much better result is achieved by loading copper and cotton instead of loading either copper or cotton alone. In that case the manifest shows:

3,000 tons copper, 30,000 feet @ \$30 per, 2,240 pounds.....	\$ 90,000
3,000 tons cotton, 270,000 feet @ \$30 per 40 cubic feet.....	202,500
6,000 tons weight, 300,000 feet.....	<hr/> \$292,500

with such a cargo the boat would be utilizing both its deadweight capacity and its cubic tonnage; the vessel would be "full and down." The revenue would be \$292,500 as against \$180,000 in the case of the copper cargo and \$225,000 in the case of the cotton cargo. The "payable tons" would be:

Copper (by weight).....	3,000 tons of 2,240 pounds
Cotton (by measurement)...	6,750 tons of 40 cubic feet

Payable tons 9,750 weight and measurement

But Mr. Annin adds: "A combination of conditions that could permit this exact result is about as common as the man who drew the grand prize in the lottery."¹ But similar

(1) The following example prepared by a practical steamship man, shows

inations can be arranged if its underlying principles understood. To throw additional light upon these we the following remarks taken from Taylor's "Stowage of Cargoes,"¹ referred to above:

Any commodity that has a stowage factor of over 40 : feet is called 'measurement freight,' and a commodity having a stowage factor of less than 40 cubic feet on is called "deadweight cargo." A simple calculation show how much measurement freight and how much weight can be carried on a given vessel. Assume the vessel is of 6,500 deadweight tons and has a cargo : of 360,000 cubic feet. After deducting 500 tons for

calculate the proper amounts of cargoes which may profitably be in a vessel.

vessel 5,000 tons deadweight capacity or 275,000 cubic feet deadweight capacity.

cargo: copper measuring 9 cubic feet to the ton;

lumber measuring on an average 100 cubic feet to the ton.

let x equal weight of copper to be loaded

let y " " " lumber " " "

$$x + y = 5,000$$

$$9x + 100y = 275,000$$

$$9x + 9y = 45,000$$

$$9x = 45,000 - 9y$$

$$45,000 - 9y + 100y = 275,000$$

$$91y = 230,000$$

$$y = 2,575.5$$

$$x = 2,472.5$$

2,472.5 tons of copper equals 22,152.5 cubic feet

2,575.5 tons of lumber equals 252,750 cubic feet

274,902.5 cubic feet

275,000 equals total freight room.

fuel and stores, it is found that the number of cubic feet per dead-weight ton is $\frac{360,000}{6,000}$, or 60. Assume that the

measurement freight has a stowage factor of 80 and the deadweight a stowage factor of 20. Deduct from the average space per deadweight ton (60) the stowage factor of the deadweight cargo (20), and multiply the remainder (40) by the cargo tonnage of the vessel. This gives $40 \times 6,000$, or 240,000. Divide by the difference between the stowage factors of the two commodities, which is 60. The result (4,000) is the number of tons of measurement freight that should be carried, and the difference between this figure and the total cargo that can be carried, or 2,000, is the number of tons of deadweight cargo. Working backwards it will be seen that the vessel under this arrangement carries the maximum weight and volume, for the weight of the two commodities is 6,000 tons and the volume is $4,000 \times 80 + 2,000 \times 20$, or 360,000 cubic feet.

The formula which may be used for the above computation is as follows:

$$X = \frac{\left(\frac{V}{T} - a\right) T}{b - a}$$

In which—

X=number of tons taken of the lighter of two commodities.

V=cargo capacity in cubic feet.

T=total number of tons of cargo that can be carried (dead-weight tonnage less tonnage of fuel, stores, etc.)

a=stowage factor of the heavier commodity.

b=stowage factor of the lighter commodity.

In the illustration just given, substitution would be made as follows:

$$X = \frac{\left(\frac{360,000}{6,000} - 20\right) 6,000}{80 - 20} = \frac{(60 - 20) 6,000}{60} = 4,000 \text{ tons of measurement cargo.}$$

"Small stowage" and dunnage.—Especially low rates are often charged on "small stowage" or "beam filling" which means cargo which can be utilized in filling the spaces which otherwise would remain unfilled owing to irregularity in size and shape of general cargo, the interruption of the cargo held by stanchions and similar conditions. If shippers give permission to the carrier that rough lumber be used as dunnage, it is wise to transport such cargo at a very low rate.

Exceptional circumstances affect rates.—The circumstances surrounding particular shipments again have a considerable bearing upon the rates charged, as for instance, the delay of certain shipments upon which the carrier counted to fill his space. Under such conditions the carrier is frequently willing to quote rates considerably below the regular tariff and over contract rates. It sometimes happens that grain, which is the commodity generally used to fill such an empty space, is carried free of charge. The result is that even in a liner rate, considerable fluctuations occur although they are not as general and as violent as in the charter market.

"You no doubt are aware that freight rates, particularly for agricultural products, change almost daily and sometimes several times during the day, depending upon the demand or otherwise for freight room. Rates quoted to-day would be only for refusal for twenty-four hours, and they're constantly influenced by the fluctuating demand for room in the various steamers. . . . Frequently wheat has been carried between the United States and London free of any charge, being simply used for ballast in the steamers, and at other times the rate has advanced to 10d. and 12d. per bushel."¹

¹ See David Lubin, *The Cost of Ocean Transportation*, p. 4.

Rate contracts.—So far we have laid emphasis upon difficulties arising primarily from the large variety of the commodities carried, but the question of rate-making in the liner business is further complicated by differences surrounding the relation of the carrier to his competitor, the relation of the carrier to the shipper, and the time and place of the shipment. In the first place, the rate is considerably influenced by the presence or absence of agreements among the carriers. As we have seen, the extent to which conferences usurp the rate-making power of individual carriers differs considerably in different trades. Then again, contracts may have been made with individual shippers, either by individual members of conferences or with the conference lines as a whole. Contract rates, as a rule, are lower than the regular tariff rates, which seems justified as long as it is the general policy of the line to contract with all shippers large or small on the same terms. "Joint contracts," entered jointly by all the members of a conference usually cover a longer period than individual contracts. The reason is that it is easier for a group of lines to guarantee regular sailings at regular intervals over a long period than for individual companies.

Economic advantages of rate contracts.—The economic advantage of contracts is to be seen in the fact that they reduce the element of speculation to a minimum. As far as the North Atlantic business is concerned the tendency is to substitute the long time, or season, contract between the shipper and the regular liner whenever possible for the old-fashioned method of shipping by chartered tramps. This tendency is to be noticed in the grain trade, the cotton trade, and, to a certain extent, in the coal trade. Besides this, other items have become the objects of long-time contracts

ent years, namely, provisions consisting of barreled oxed bacon, and lard in packages and cotton-seed oil eels.

question of discrimination.—In this connection question should be discussed whether equal rates should be charged all shippers irrespective of the volume of freight. Both railroads and steamships have, during certain periods of the past, discriminated in favor of the large shippers. As far as the railroads are concerned the Hepburn Act of 1906 put an end to this practice. As a matter of fact, the railroads themselves have learned to appreciate that discrimination in favor of the large shipper is based on an unsound principle, for, on the one hand, if all are in fair chances, the small shipper of to-day is very often a large shipper of to-morrow. On the other hand, the small shipper, subsidized by discriminating rates, rapidly increases the volume of his shipments and can periodically invoke this increase as a reason for additional reduction of rates. With modifications, the same applies to steamships. The principle of equal rates to large and small shippers is gradually being recognized in ocean transportation. To discriminate against the small shipper is injurious to the industry at large in so far as it prevents a wide diffusion of prosperity which arises from successful export trade.

Method of quoting freight rates. — Considerable changes have occurred during recent years which affect the method of quoting freight rates. The old measure, which was widely used, was that of basing the rate upon the ton or measurement ton. This means that the shipper will be charged so much per ton of 2,240 pounds or per cubic feet, whichever may bring the larger revenue to the steamship company. The majority of commodities

were classed as "measurement goods." This has long been the only distinction made. The first improvement was the introduction of a rate quoted for cottonseed oil per barrel. This practice of quoting per package or other unit is spreading. Another tendency is towards substituting a ton of 2,000 pounds for that of 2,240, and quoting a rate on the basis of 100 pounds. The most important development however is, undoubtedly, the growing importance of the ocean traffic. We, therefore, go into this matter rather fully.

Origin of ocean tariffs.—The development of ocean tariffs has followed entirely different lines from that of railway tariffs. The latter are as old as railroads themselves. On the other hand, if we include in our consideration shipping of the classic stage, that is shipping of the days when the mariner always kept the coast in sight, or stayed within the boundaries of the Mediterranean Sea, navigation has existed for centuries, perhaps even thousands of years without knowing or using tariffs. The first beginnings are found during the 17th and 18th centuries, but they were temporary and exceptional. The real history of ocean tariffs does not begin until about 1870, or thereabouts. The development since then has been so rapid that we probably do not exaggerate if we say that nowadays ocean tariffs form the basis of price calculation and price formation in most shipping transactions where general freight is concerned.

Nature of a tariff.—In order to understand the historical development we should first try to understand the nature of a tariff. Tariffs are merely forms of price formation. In transportation, as well as in all other branches of commercial activity, a price may be either the result of a negotiation, revolving around a definite service or trans-

ction; or else a price might be determined for entire groups of like services or commodities. In the latter case he buyer usually knows beforehand what charges he has to expect and he is at liberty to either accept or refuse the terms as fixed in the tariff which is a list of predetermined prices for groups or classes for like services or commodities. We thus see that three main differences exist between the price resulting from individual negotiation and a tariff. In the first place the tariff is meant to apply to a series of services or transactions. Secondly, the calculation of the tariff rate is based upon the application of the tariff during a given period of time. Thirdly, the tariff is one-sidedly fixed by the seller.

From this analysis of the nature of a tariff the following conclusions may be drawn regarding the use of tariffs in ocean transportation. Several prerequisites have to be applied before a tariff can be introduced in the shipping business. In the first place there must be a division between the buyer and seller of ocean transportation as a commodity. This division, as we have seen, appears only at a relatively advanced stage of transportation history. Furthermore, the tariff presupposes the demand for a more or less pronounced regularity and continuity of services of like nature. As long as each voyage represents a problem by itself, differing essentially from any other voyage, tariff is unthinkable. Finally the successful introduction of a tariff requires certain authority on the part of the shipping companies, and this is lacking as long as the ownership of vessels is widely scattered among a large number of small shipowners who hotly compete for the freight business offered. The last prerequisite explains largely why the real history of tariff development, in ocean shipping does not begin until about 1870. From that time on we have observed a grow-

ing tendency toward concentration and combination and the building up of large portmanteau companies who again form groups among themselves and reduce competition through agreements and conferences. It was this movement which gave to the steamship companies the power to dictate the rates to be charged, without which tariff cannot be enforced.

Oldest ocean tariffs known.—The oldest tariffs were those used in connection with the "Börtfahrt" which we described in a preceding chapter. The motives of their introduction, and the aims which were to be reached by their application differ materially from those which prompt modern steamship companies to their use. These old tariffs must be considered in connection with the general conditions prevailing at that time, viz. during the 17th and 18th centuries. The tariffs were enforced by the city councils and were not dictated to the shippers by the carrier. The tariff was formulated with the interest of the community in view, while the modern tariff follows the principle of maximum return to the steamship company. The following is a translation of part of the tariff which applied to the "Börtfahrt" between Hamburg and Amsterdam, and which was issued on September 25, 1613.

TARIFF

Of payment to be made to the carrier engaged in the line service between Hamburg and Amsterdam and return; the summer rates apply to the period beginning on the 19th of February (or 1st of March) and ending 21st of September (or October 1st); the winter rates apply during the remaining time of the year.

COMMODITIES	From Hamburg To Amsterdam		From Amsterdam To Hamburg	
	Winter Rate	Summer Rate	Winter Rate	Summer Rate
	Gulden Stuver	Gulden Stuver	Gulden Stuver	Gulden Stuver
Potash, per 100 lbs.....	.04	.04½	.03	.03½
Fish, per burden.....	4.10	5.	4.08	5.
Smoked herring, per burden.....	...	...	4.04	4.12
Wheat, per burden.....	5.10	6.	5.08	6.
Rye, per burden.....	4.10	5.	4.08	5.
Barley, per burden.....	3.10	4.	3.08	4.
Oats.....	2.10	3.	2.08	3.
Tallow, per burden (12 small kegs per burden).....	4.10	5.	4.08	5.
Hamburg beer, per burden.....	6.10	7.	....	....
Iceland cod liver oil and Muscovite cod liver oil.....	5.	5.10	5.	5.08
Tallow, in barrels, per 100 lbs.....	.04	.05½	.04	.04½
Ginger, per pkg. 500 lbs.....	1.	1.05	1.	1.04
Almonds, rice, etc., per pkg.....	.10	.12	.08	.10
Ivory, raw (per 100 lbs.).....	.05	.05½	.04	.04½
Indigo, per 100 lbs.....	12½	.14	.10	.12
French wine, per bbl.....	2.10	2.15	2.08	2.12
Honey, per ton.....	12½	.15	.10	.12
Sugar, per 100 lbs. kegs.....	.06½	.07	.05	.06
Brazilian sugar, per case.....	1.05	1.10	1.04	1.08
Steel rods, per lots.....	.03	.03½	....	....
Copper or iron wire, loose or in lots per 100 lbs.....	.04	.04½	.03	.03½
Figs and raisins, per baskets.....	.04	.04½	.02½	.03
Syrup, per 1000 lbs.....	1.05	1.10	1.04	1.08
Raw silk, bale.....	2.10	3.	2.08	3.
Hemp, per 100 lbs.....	.08	.09	.06½	.07
Saltpeter, per 100 lbs.....	.04	.04½	....	....

Commodities not enumerated here and concerning the rate on which shipper and carrier cannot agree will be charged a rate to be determined by the aldermen.

IN WITNESS WHEREOF, WE the Mayors and Councilors have hereunto set our hands and the official city seal.

Decreed in the Senate and published September 25, anno domini 1613.

(This is a partial translation of the original tariff as published in the "Forschungen zur Hamburgischen Handelsgeschichte." Vol. II: Die Börtfahrt zwischen Hamburg, Bremen und Holland, Hamburg 1898.)

Principles underlying tariff structure.—On the whole this tariff follows about the same principles which we apply today in formulating modern tariffs. The weight and measurement of the commodities are both considered and, to

a certain extent, the price is also taken into consideration. But as we stated before, the general principle of price fixing took into consideration the interest of the community rather than that of the carrier. It is not quite easy to compare this 17th century tariff with our modern tariffs because the units of measurement are very different and the system of weights and measurements in use in 1613 was very undeveloped as compared with present conditions. The extent to which value is considered alongside with weight and volume of commodities is strikingly illustrated by the rates charged for the transportation of wheat, rye, barley and oats respectively.

The distinction made between summer and winter rates is particularly interesting. It is easily explained by the fact that primitive sailing vessels such as must have been employed in this service, suffered very much more from the severities of winter storms than would be the case with modern steamers. We must remember that the ships of these days seldom measured more than about $2\frac{1}{2}$ gross tons. The risk and hardships to which the officers and crew were exposed must have been considerably greater in winter time than during the summer months. Undoubtedly also, the time consumed during the voyage had a bearing upon the difference in winter and summer rates. The perfection of ship construction and ship operation, the advance made in nautical science and the improvements introduced for the purpose of greater safety of ocean transportation have rendered obsolete this subdivision of ocean freight tariffs into winter and summer schedules.

"Tonnage scales" and "printed rates of freight."—As we stated before, these tariffs which regulated the freight charges of ships engaged in the line service of the 17th and 18th century, may be looked upon as the prototypes of

modern tariff. Before taking up our present-day tariffs, another line of development should be followed up. The connection between the early tariffs and the present tariffs is only loose, and the line connecting the two phenomena is not unbroken. During the interval when prevailing conditions did not warrant the application of ocean freight tariffs, another instrument was used in the technique of rate-formation. We refer to the *tonnage scales*, or *tonnage tables*, also called *printed rates of freight*. These scales do not determine the actual freight to be charged on a given commodity, but merely serve to establish the degree of difference which is to exist between the rates chargeable to different commodities. These tonnage scales have considerable similarity with tariffs. They differ, however, in one essential feature. They do not preclude individual negotiation, that, after all, is the greatest advantage which the introduction and general application of ocean tariffs bring to the carrier and shipper alike. One might almost say that the tonnage scales are merely the foundation on which a tariff may be built up. In so far, however, as they afford a uniform foundation to the individual negotiation of the amount which the carrier was to charge the shipper, the tonnage tables are properly considered in connection with the development of the modern ocean tariff. The introduction of the tonnage scale materially simplified the negotiation. When a shipper wanted to load a variety of commodities, he used to negotiate one rate and this rate automatically applied to the other commodities, making up a shipment, the rates being determined by the tonnage scale. Thus we find clauses of the following nature:

To load a full and complete cargo of sugar, in cases, and other lawful merchandise. Freight to be paid per sugar net weight delivered and for other goods in a

fair proportion to sugar in cases, according to the Balm Table-rates."

This example shows that these tonnage scales were equally important in the charter and the berth traffic.

"Tonnage scales" disregard value.—The tonnage scales themselves are based exclusively on weight and measurement and do not regard the value of the commodity. For that reason, tonnage scales do not cover the more valuable commodities. Their transportation is subject to freight charges arrived at through individual negotiation. A good example is the East Indian trade where tonnage scales are used to this day, but where cargoes of special value, commonly known as "chow-chow cargo," are not covered by the "scales." Rugs, antiques, art treasures, mother-of-pearl, and similar commodities are excluded from the tonnage scale.

The tonnage scales are built up on one base commodity which differs according to the geographic peculiarities of the particular trade to which the scale is to apply. Thus oats formed the basis of the old Riga scale. Wheat, that of "The London and Baltic printed rates of Freight." Jute, that of the Calcutta tonnage scale. In some cases the basis is furnished by a commodity which has long lost its supremacy in that particular field. An example of this would be a certain Black Sea scale where tallow was used as basis long after that commodity had lost its prime importance.

The following example will serve as an illustration of a tonnage scale such as they were used in recent times:—

LONDON PRINTED RATES OF FREIGHT¹

Edition of 1868

- HEMP** (from Petersburg), Outshot, to pay $\frac{1}{8}$; Half Clean $\frac{1}{4}$; Codilla $\frac{1}{2}$ more than the Freight of Clean Hemp.
- (from Riga), Outshot, to pay $\frac{1}{8}$; Pass $\frac{1}{4}$; Codilla $\frac{1}{2}$ more than the Freight of Rhine Hemp. Polish and Rhine Hemp on the same footing.
- FLAX**, in all cases, the same Freight as Hemp.
- TALLOW**, to pay $\frac{2}{3}$ the Freight of Clean Hemp on the Gross Weight.
- ASHES**, to pay $\frac{2}{3}$ the Freight of Clean Hemp on the Gross Weight.
- BRISTLES AND TANNED HIDES**, to pay $\frac{2}{3}$ the Freight of Clean Hemp per ton of 44 Poods, Gross.
- DRIED HIDES**, to pay $\frac{3}{4}$ more than the Freight of Clean Hemp per ton, Gross.
- WET OR SALTED HIDES**, to pay $\frac{2}{3}$ the Freight of Clean Hemp per ton, Gross.
- HAIR SKINS**, to pay the same freight as Clean Hemp per ton of 3,500 skins.
- ISINGLASS** (in Bales), to pay the same Freight as Clean Hemp per ton, of 44 Poods, Gross.
- (in Casks), to pay $\frac{1}{4}$ more than the Freight of Clean Hemp per ton of 44 Poods, Gross.
- BEES' WAX** (in Mats), to pay $\frac{2}{3}$ the Freight of Clean Hemp per ton of 63 Poods, Gross.
- (in Casks), to pay the same Freight as Clean Hemp per ton, 63 Poods, Gross.
- WOOL**, to pay double the Freight of Clean Hemp per ton, 63 Poods, Gross.
- MANUFACTURED HORSE HAIR**, to pay double the Freight of Clean Hemp per ton of 44 Poods, Gross.
- HORSE MANES**, to pay $\frac{1}{4}$ more than the Freight of Clean Hemp per ton of 44 Poods, Gross.
- HORSE TAILS**, to pay the same Freight as Clean Hemp per ton of 44 Poods, Gross.
- FEATHERS**, to pay the same Freight as Codilla Hemp per ton of 44 Poods, Gross.
- LINENS**, 80 Pieces Flem.
- 90 Ditto Ravenducks.
- 120 Ditto Drillings.
- 80 Ditto Narrow, of 1 Ell.
- 40 Ditto Broad, of 2 Ells.
- 60 Ditto Sail Cloth
- 6,000 Archeans, Broad Diaper, Linens or Crash
- 8,000 Ditto Narrow Linen, Diaper, or Huckaback

Equal to
 $\frac{2}{3}$ of
 a ton
 of
 Clean
 Hemp

¹ From George Harrison, *The Freighter's Guide and Corn Merchant's Assistant*. New Edition. London, 1868, pp. 159-160.

GRAIN, Wheat, 97 Imperial Quarters equal to 10 tons of Clean Hemp.

— Peas, Beans and Tares, to pay 10 per cent. more than the Freight of Wheat.

— Rye, to pay $7\frac{1}{2}$ per cent.

— Linseed, to pay 10 per cent.

— Barley, to pay 15 per cent.

— Oats, to pay $22\frac{1}{2}$ per cent.

Sowing Linseed, 12 Barrels, in Casks } Equal to 1 ton

—, 24 Barrels, in Bulk } of Rhine Hemp

WOOD, not to be considered as coming under the denomination of Stowage Goods.

— Deals, 120 pieces Petersburg Standard, equal to 3 Loads of Timber.

— Wainscot Logs, to pay $\frac{1}{3}$ more than the Freight of Fir Timber, per load of 50 cubic feet, Custom House Calliper Measure.

— Half Logs, for Broken Stowage, to pay $\frac{2}{3}$ the Freight of Whole Logs.

— Round Masts, 33 feet Girt Measure, equal to 1 load of Fir Timber, of 50 feet, Custom House Calliper Measure.

— Staves (as Cargo), 1 Mille of Running Pipe equal to 20 loads of Fir Timber.

— Deal Ends (for Broken Stowage), to pay $\frac{2}{3}$ Freight of Deals.

— Lathwood (for Broken Stowage), 1 Fathom of 4 feet equal to 1 load of Timber.

MATS (from Archangel), to pay 5 per cent. less than the Freight of Hemp, for any Quantity not exceeding One-sixth Part of the Ship's Cargo, reckoning 400 pieces of Double and 500 pieces of Single, to 1 ton.

PITCH AND TAR, 100 barrels equal to 97 Quarters Wheat, Imperial Measure.

A modern tariff.—The pronounced difference between such a "tonnage scale" and a modern tariff is brought out by a comparison with the following which is a page from one of the tariffs issued by the Rates Division of the United States Shipping Board:

UNITED KINGDOM TARIFF NO. 8-B. (Page 4.)

Lead Billets—See Pig Lead.

Leather, sole and scrap..... \$2.50 100 lbs.

Leather Finished, in rolls or bales..... 2.00 100 lbs.

Leather Finished, in cases..... 2.00 100 lbs.
or \$1.00 cu. ft.

Leather-board..... 1.50 100 lbs.

Liniments—See Drugs.

Lithophone.....	1.00	100 lbs.
Liquors, bbls. and cases.....	.65	cu. ft.
Lubricating Oil.....	1.00	100 lbs.

Lumber:

Yellow Pine.....	42.00	1000 superficial ft.
Other Lumber and Timber—Heavy.....	1.00	100 lbs.
Other Lumber and Timber—Light.....	1.22	100 lbs.
Logs.....	1.00	100 lbs.

These rates apply on Timber and Logs when not exceeding two tons in weight. When exceeding two tons, special contract.

The following are the varieties of lumber:

Heavy: Ash (black, white), Beech, Birch, Cherry, Dogwood, Elm (rock), Gum, Hickory, Blackberry, Lignum-Vitae, Locust, Mahogany, Maple, Oak, Persimmon, Walnut.

Light: Basswood, Butternut, Cedar, Chestnut, Cottonwood, Cypress, Elm (soft), Hemlock, Pine (white), Poplar, Spruce, Sycamore, Tupelo, Willow.

Macaroni.....	\$1.50	100 lbs.
Machinery—up to 2 tons.....	1.00	100 lbs.
	or \$0.50	cu. ft.

Magnetos.....	.75	cu. ft.
	or 1%	ad. val.

Malt, in bags.....	1.25	100 lbs.
Maple Syrup.....	1.00	100 lbs.
Match Blocks.....	1.00	100 lbs.

Medicines—See Drugs.		
Methyl-Ethyl-Ketone.....	2.50	100 lbs.
Milk, powdered, in bbls.....	1.00	100 lbs.
Mica, ground, in bbls.....	1.00	100 lbs.
Mohair, in bales.....	2.50	100 lbs.

Monel Metal.....	1.00	cu. ft.
Motion Picture Films.....	1.00	cu. ft.
	or 1%	ad. val.

Nails, wire.....	13.00	2240 lb.
Needles, machine.....	.75	cu. ft.
	or 1%	ad. val.

Nuts and Bolts—See Bolts and Nuts.		
Ochre, in barrels.....	1.00	100 lbs.
Office Equipment.....	.50	cu. ft.
Oilcake.....	Special	
Onions, in bags.....	1.25	100 lbs.

Optical Goods.....	.75	cu. ft.
	or 1%	ad. val.
Oysters, in bbls.....	3.25	bbl.

Pails, nested—See Tubs.		
Paint (non-inflammable).....	.65	cu. ft.

Paper, in cases.....	.50 cu. ft.
Paper, printing, in rolls or bales.....	1.25 100 lbs.
Paralite Pitch.....	1.00 100 lbs.
Patent Medicines, see Drugs.	

Refrigerator Cargo—Special Stowage: The following additional rates are to be charged as minimums for such special stowage (in addition to ordinary stowage rate) on all classes of cargo—except fruit:
 Frozen.....in a temperature of 32° or less Fahr. \$1.50 additional
 Cold Storage...in a temperature of 33° to 40° " incl. 1.25 additional
 Cool Air.....in a temperature of 46° and above 1.00 additional

Heavy Lift Scale: The following rates to be added to the base rate for packages weighing in excess of 2 tons: Effective on package freight, such as machinery, automobiles, and boxed goods, but does not apply to rough steel goods, such as structural material, steel plates, rails, etc., viz.:
 Packages weighing over 2 tons and not exceeding 3 tons 20 cents cu. ft.
 or 40 cents 100 lbs.

Packages weighing over 3 tons and not exceeding 4 tons 30 cents cu. ft.
 or 60 cents 100 lbs.

Packages weighing over 4 tons and not exceeding 5 tons 40 cents cu. ft.
 or 80 cents 100 lbs.

Packages weighing over 5 tons and not exceeding 6 tons 50 cents cu. ft.
 or \$1.00 100 lbs.

Packages weighing over 6 tons and not exceeding 7 tons 75 cents cu. ft.
 or \$1.50 100 lbs.

Packages weighing over 7 tons and not exceeding 10 tons \$1.00 cu. ft.
 or \$2.00 100 lbs.

This sample page gives an idea how elaborate these tariffs are. It will be noted that no attempt at classification is made. The Shipping Board tariffs were straight commodity tariffs. The Rates Division, prior to March 1, 1930, when a new system of rate-making was devised, had issued the following tariffs:¹

- North Atlantic to United Kingdom and Continent.
- South Atlantic to United Kingdom and Continent.
- Gulf to United Kingdom and Continent.
- Atlantic and Gulf to South America.
- North Atlantic and Gulf to Orient.
- Pacific coast to Orient.
- North Atlantic to New Zealand and Australia.
- North Atlantic to India.
- North Atlantic to Africa, Turkey, Red Sea ports.
- Between Atlantic and Pacific ports.

¹ From Fourth Annual Report of the United States Shipping Board, pp. 145-146.

Cotton: Atlantic and Gulf to United Kingdom and Continent.
Lumber: North Atlantic, Gulf, and Pacific to United Kingdom and Continent.

Coal: North Atlantic to European ports, Atlantic and Gulf to South America.

Coal: Pacific to Far East.

Nitrate: Chilean ports to North and South Atlantic.

System abandoned.—“On March 1, 1920, these tariffs were abrogated. At that time, according to the Fourth Annual Report of the Shipping Board, the managing agency agreement No. 3 was adopted, the general terms of which provide for the operation of Shipping Board vessels under a profit-sharing plan, which changed the method of rate-making. Under this new arrangement, rates for vessels on general cargo services are made by conferences of Shipping Board managing agents. The conferences were organized under the supervision of the traffic department of the Division of Operations.

“On full and bulk cargoes under this plan managing agents are given freedom of action in making rates subject to the prevailing market quotations. On the formation of the general cargo conferences the rates division ceased to issue tariffs. Four such general conferences have been established, namely, North Atlantic, with headquarters at New York; South Atlantic, with headquarters at Savannah; Gulf, with headquarters at New Orleans; Pacific coast, with headquarters at San Francisco. These general conferences have subcommittees which cover the other ports within their respective districts on general cargo services to practically all parts of the world.

“As a result of these activities complete stabilization of rates in some trades and a large measure of stabilization in practically all the trades has followed.

“The formation of the conferences after March 1, 1920,

changed the character of the work of the rate division. Although being relieved of keeping in actual touch with the local conditions which was necessary in order to quote on all kinds of cargoes and in varying quantities, the division has been called upon to perform duties of a different nature and of greatly added importance. The rules of the conferences require that any action on their part must be by unanimous vote; failing, the questions in hand are referred to the Board for decision. Further, before making any drastic rate changes the conferences must also submit their recommendations for approval. A successful functioning of the conferences as a whole requires a relationship in rates and practices of the different districts, which is brought about by suggestions or instructions from the rates division. Criticism by the public of rates or practices when they are made are investigated and handled by this division with the assistance of the conferences when necessary."

Freight classification.—Feeble attempts have been made at freight classification and various factors have combined to work in that direction. In the first place, the number of articles shipped is increasing rapidly, rendering simplicity through classification more necessary. Secondly, the entrance of certain transcontinental railroads into ocean shipping has brought with it as a natural concomitant the extension of railroad methods to ocean shipping. To a certain extent also, the example set by the German lines has had a bearing upon these improvements.

The following paragraph, which is quoted from G. G. Huebner's *Ocean Steamship Traffic Management* (pp. 229-230), shows the extent to which freight classification is made the basis of ocean line rates: The New York and Cuba Mail Steamship Company (Ward Line), operating from New York, and the Kerr Steamship Line and Wolvin Line oper-

rom New Orleans to Mexican ports, provide for three
ed classes 1, 2, 3, and rate certain additional articles
and double the first-class rates. The United Fruit
ny in its services from New York and New Orleans
acific ports in Colombia, Ecuador, Peru and Chile
es tariffs which contain four numbered classes and
nal ratings of double, four and five times the first-
ates for certain articles. The Panama Railroad
hip Line in its tariffs covering traffic from New York
n and Cristobal names five numbered classes and also
ratings of $1\frac{1}{2}$, $1\frac{1}{2}$ and double first-class and double
class rates for some items; and in its tariffs covering
rom New York to Pacific ports of Colombia, Ecua-
ru and Chile, it provides four numbered classes and
me articles at double and five times the first-class

The Gulf Foreign Freight Committee Lines, in-
the Atlantic Steamship Lines of the Southern Pa-
ailroad, the Munson Line, United Steamship Com-
nd Occidental Steamship Company, classify traffic
from Key West, New Orleans and Galveston to
and Cuban out ports into the classes provided for
Official Classification of the eastern trunk line rail-
.e., six numbered classes, two rules (Rule 25 and 26)
certain instances multiples of Class No. 1.

even where an elaborate tariff existed it used to be
dency to keep it jealously back of the counter in
hip offices; this does not refer to ships in the coast-
ade. The Shipping Act of 1916 requires that com-
rriers by water in interstate commerce shall file with
ard, open to public inspection, the maximum rate.¹

control.—But also the steamship companies en-
in foreign trade are not free from rate control as

Section 18 of the United States Shipping Act, 1916.

appears from the following excerpt from the U. S. Shipping Act:

SECTION 16.—That it shall be unlawful for any common carrier by water, or other person subject to this Act, either alone or in conjunction with any other person, directly or indirectly—

“First. To make or give any undue or unreasonable preference or advantage to any particular person, locality, or description of traffic in any respect whatsoever, or to subject any particular person, locality, or description of traffic to any undue or unreasonable prejudice or disadvantage in any respect whatsoever.

“Second. To allow any person to obtain transportation for property at less than the regular rates then established and enforced on the line of such carrier, by means of false billing, false classification, false weighing, false report of weight, or by any other unjust or unfair device or means.

“Third. To induce, persuade, or otherwise influence any marine insurance company or underwriter, or agent thereof, not to give a competing carrier by water as favorable a rate of insurance on vessel or cargo, having due regard to the class of vessel or cargo, as is granted to such carrier or other person subject to this Act.

SECTION 17. That no common carrier by water in foreign commerce shall demand, charge, or collect any rate, fare, or charge which is unjustly discriminatory between shippers or ports, or unjustly prejudicial to exporters of the United States as compared with their foreign competitors. Whenever the board finds that any such rate, fare, or charge is demanded, charged, or collected it may alter the same to the extent necessary to correct such unjust discrimination or prejudice and make an order that the carrier shall dis-

ue demanding, charging, or collecting any such undiscriminatory or prejudicial rate, fare, or charge. Every such carrier and every other person subject to this shall establish, observe, and enforce just and reasonable regulations and practices relating to or connected with the loading, handling, storing, or delivering of property. Whenever the board finds that any such regulation or practice is unjust or unreasonable it may determine, prescribe, and enforce a just and reasonable regulation or practice.

Regulation of charter rates.—Rate regulation, naturally, divided into two main phases: regulation of charter rates and regulation of berth rates. We quote the following statement of charter rate regulation from the Third Annual Report of the United States Shipping Board, pp. 11-12:

During the war the question of control of tonnage and rates was an important factor. The natural trend of the market since the signing of the armistice has made the control over rates less essential from the viewpoint of preventing them from becoming exorbitant. If anything, the situation has been reversed and the difficulty now lies in the Chartering Executive and the various departments of the Shipping Board are now facing is to endeavor to maintain a satisfactory rate, rather than to enforce further reductions in rates.

In view of the heavy committance and tonnage which the government has been obligated to enter into during the war and which is now under the control of the Board, it is obviously requisite that freight rates should be kept at a paying level, as otherwise this vast tonnage would be in a serious situation of having to operate at rock-bottom rates.

bottom rates under operating costs, in many instances, quite triple the cost before and during the early part of the war.

"The Chartering Committee and Chartering Executive have from time to time in conjunction with the Division of Operations determined upon certain rates as 'fixed rates,' i.e., rates which were to be maintained and not exceeded, the idea being to create a stable condition in freights and obviate undue fluctuations. The fixed rates were in force only in the West Indies trade and South American trade. In all other trades there was a maximum rate in effect, and in all cases the maximum rate was of such a nature that it was high enough so that no fixtures were made in the maximum rate in effect. 'Fixed rates' apply to the West Indies trade. Upon the removal of the rate control in this trade, outside fixtures will probably be made at rates lower than those quoted by the Shipping Board."

The Shipping Board and rate control.—The last two Annual Reports of Shipping Board contain excellent paragraphs on the working of these regulatory features of the Shipping Act of 1916. We cite the following from the Third Annual Report (pp. 23-25) :

The Division of Regulation shortly after the armistice was signed began to exercise its functions more fully than had during the war period. The work of the division is essentially the regulation of rates and practices of water carriers in peace times and is properly divisible into four parts, namely, formal dockets, informal dockets, tariffs and contracts and conferences, each of which will be separately considered.

Cases on the formal docket embrace complaints submitted by shippers and other persons against carriers subject to the Board under authority of section 22 of the Shipping Act of 1916. During the entire period the Board has been

regulating the activities of water carriers only six formal complaints have been filed.

Article 24 of the Rules of Practice in Proceedings under the shipping act provides that any letter or written memorandum other than formal complaints in which a violation of the act is alleged will be regarded as an informal complaint and that the Board, through correspondence and informal conferences, will attempt to adjust the matter complained of. During the past year 63 of such informal complaints were filed.

Common carriers by water in interstate commerce operating on the high seas or the Great Lakes on regular routes from port to port are required by section 18 of the shipping act to file with the Board and keep open to public inspection in the form and manner prescribed by the Board their maximum rates, fares, and charges, and are prohibited from demanding, charging, or collecting rates in excess of those so published except with the approval of the Board and after 10 days' notice unless the Board for good cause shown waives such notice. A file of these tariff publications is maintained by this division and kept open to the public at all times. The Shipping Act does not impose upon carriers engaged in foreign trade the duty of filing tariffs with the Board.

The Board has issued tentative tariff regulations which have been used by carriers as a general guide in publishing their tariffs, but there is now before the Board a draft of permanent tariff regulations which will probably be promulgated at an early date.

The tariff files in the office of the division now contain 1,150 freight tariffs and 1,175 supplements thereto, and 282 passenger tariffs and 133 supplements thereto.

Carriers and other persons, such as forwarders, amenable

to the jurisdiction of the Board are required by the provisions of section 15 of the Shipping Act to file copies of complete memoranda of all contracts, agreements, and understandings in respect to rates, traffic, pooling of equipment, or any other working arrangement.

The contracts and agreements above mentioned fall into two classes—the so-called steamship conferences, which are understandings among combinations of groups of steamship lines as to policies affecting operations, traffic, ports etc.; and in the past also involved the maintenance of systems of deferred rebates which are now prohibited by law. These steamship conferences are supplemented by what are called conference agreements, these latter instruments being contracts or agreements between parties subject to the original conference and based on that conference. It does not necessarily follow, however, that all of the parties to the conference are parties to the conference agreement. The other class of contracts includes those between carriers subject to the Board outside of the conferences on the one hand and carriers and other persons subject to the act—such as persons furnishing wharf and terminal facilities in connection with a common carrier by water—on the other hand. These contracts cover a variety of matters from the furnishing of wharfage to the allotment of ports. In order to facilitate the work of the office concurrences in carrier's contracts and conferences already on file have been accepted in lieu of copies of the documents themselves. A complete file of these conferences and contracts is maintained.

Relations with the railroad administration.—The Board through its Division of Operations maintains close contact with the United States Railroad Administration, being fully recognized on both sides that in the interest of

American foreign trade the fullest possible cooperation between ocean and rail transportation facilities is essential.

A committee composed of the Assistant Director of Traffic of the Railroad Administration and the Assistant Director of Operations of the Emergency Fleet Corporation has been appointed to handle the many questions involving the relations between shipping and the railroads, the following being among the important subjects which have had consideration:

- (a) Through export bills of lading.
- (b) Export and import rail rates.
- (c) Allocation of Shipping Board tonnage to relieve temporary congestion at certain ports.
- (d) Joint consideration of traffic available to support regular sailings from United States ports.
- (e) Assignment of Shipping Board vessels for railway operation.
- (f) Wage questions involving railway floating equipment and Shipping Board vessels.

It is the earnest desire of the Board to have the closest possible unity between rail and ocean carriers, so that American shippers may have a continuous transportation system for world-wide foreign trade, whereby goods can be shipped from a point in the United States to any place in the world as conveniently and with as little obstruction as to one of our own cities.

The following is taken from the Fourth Annual Report (pp. 61-65):

Rate function of Division of Regulation and Division of Operation distinguished.—Some confusion or misunderstanding prevails as to the rate regulation work carried out by the Division of Regulation and the ratemaking or rate-controlling work performed by the Division

of Operation. It is important, therefore to clarify the jurisdictional differences.

The Division of Regulation deals exclusively with common carriers by water in the domestic and foreign commerce of the United States. Its functions are quasi-judicial. The Shipping Act leaves with the common carriers the right to initiate rates, which, however, in respect of interstate carriers must be published, posted, and filed in accordance with regulations prescribed by the Shipping Board. If shippers feel that any rates so filed are unduly discriminatory, excessive, unreasonable, or otherwise in violation of the shipping act, 1916, they may file with the Board under section 22 of the act a sworn complaint setting forth their grievance and praying for corrective action by the Board and reparation for damages sustained. After all necessary pleadings are filed the division holds an open hearing at which both sides are allowed to present evidence and cross-examine witnesses. If upon the facts proved it appears that the rates are unduly discriminatory or unreasonable, the carrier is directed by formal order of the Board to adjust its rates in such a manner as to correct the evil found to exist. It will thus be seen that the division in no sense can be said to be making rates, but is merely acting as a judge of the rates made directly by the carriers.

While the Division of Operations was engaged extensively in operating vessels directly, it maintained a rate-making section, the function of which was to actually determine and make the rate which should be charged shippers. Since the Shipping Board vessels have been operated by private interests, the Division of Operations, through its agreement with the operators and its power to allocate vessels, maintains a large measure of control over the actual

be exacted by the operators. The operators in a particular trade organize what may be termed a steamship conference, the chairman of which is a representative of the Division of Operations. They meet at intervals and fix the rates to be paid by the shippers. These so fixed are, of course, liable to attack by shipowners on the ground of unreasonableness or undue discrimination, in which event the Division of Regulation would take action against them as indicated in the preceding paragraph, thereby manifest that the rate functions of the Division of Regulation and the Division of Operations are different.

Carriers' Conferences and Contracts.—One of the principal activities of the Division of Regulation during the year has been the handling of carriers' conferences, contracts, agreements, and understandings in respect of traffic, pooling of equipment, or traffic and other arrangements filed under the provisions of section 19 of the shipping act, 1916. Owing to the constantly changing conditions in the shipping world, this branch of work of the Division of Regulation is assuming large proportions.

At the end of the fiscal year there were on file in this office 32 conferences. These conferences are, in the main, associations of steamship companies designed primarily to operate in such manner as to prevent destructive competition, under which function various subconferences, or, if situated in certain regions, trade conference groups. For instance, Gulf Shipping Conference (Inc.), there are subsidiary conferences or trade groups. Most of these conferences hold weekly meetings, at which matters of interest to the particular trade are discussed and

definite action taken. The filing and analyzing of the minutes, tariffs, and other conference papers in order to determine whether or not they are in contravention of the existing law is a task which is not only difficult but one which must be kept strictly up to date in order to be effective. It should be remembered that a large percentage of the new conferences being filed with the Board are a direct result of the Shipping Boards' participation in the coast-wise and foreign trade of the United States. The carriers forming the new conferences are all American, although they operate on the same plan as the foreign line conferences which have been established for many years.

The carriers' contracts which were filed prior to and during the war and which lay practically dormant in the files until the beginning of last year have all been brought up to date. Many of the contracts were found to be canceled or superseded by new ones. There are at the present time 194 contracts on file.

Tariffs checked and analyzed.—The checking, analyzing, and filing of tariffs submitted by the interstate water carriers subject to the Board constitutes a large part of the work of the division. During the year 1,452 new tariffs were received, checked, and filed. These tariffs show rates on the Atlantic, the Gulf, and the Pacific coasts, as well as the Great Lakes; also to Porto Rico, Canal Zone, Hawaii, Alaska, and the Philippines.

A duplicate tariff file is maintained in the division. This file is kept up to date and is open to public inspection at any time. This privilege is being taken advantage of by representatives of various shippers and persons directly interested in waterborne commerce.

Regulations for the publication, posting, and filing of

with the Board were compiled and issued in a let entitled "Tariff Circular No. 1," effective April 20. Since that date, common carriers by water in ate commerce subject to the jurisdiction of the have been required to file their tariffs in accordance aid regulations.

he present time 99 interstate water carriers are filing which represents an increase of 40 over those filing the previous year. In addition, 10 tariff agencies omitting tariffs.

Charter filing regulation.—The latest development in letter of rate control is the so-called Charter Filing tion which went into effect October 1, 1920. Basing ion on authority granted in section 19 of the Mer- Marine Act of 1920, the Shipping Board requires that rters of American and foreign privately owned ves- ust be submitted to a chartering executive of the
The text of the announcement reads in part as s:

"**Two certified copies of each charter made on all Ship- board vessels, privately owned American and foreign are to be filed with the chartering executive at New at which time the chartering executive will issue a charter filing certificate in duplicate, said certificate showing that vessel is in order for clearance, and duplicate this certificate is to be surrendered to the collector : vessel applies for clearance."**

ere there is insufficient time for the filing of the char- oceeds the communication, a letter or telegram to the ring executive "giving details pertaining to said :" will suffice. In such cases an order for clearance issued on the understanding that two certified copies

of the charter will be forwarded in due course. General cargo and passenger vessels, those in ballast and those carrying cargo for owners' account, are not subject to the new regulation.

The avowed purpose of the order is to secure data which will enable an exact compilation of figures showing the portion of our commerce carried in American and in foreign bottoms respectively. Whether the suspicion aroused and the interference with private business caused by the order will lead to its speedy repeal remains to be seen.

In conclusion we would say, that no other country has ever attempted so ambitious a plan of rate control and shipping supervision, just as no other country can boast of a Sherman Anti-trust law. Many years will go by, before we as a nation have made up our minds about this weighty problem of government control of business. But signs multiply, that a more liberal era is dawning upon us.

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CHAPTER XXVII

THE FINANCES OF SHIPPING COMPANIES

Unsteady character of steamship profits.—The central fact of shipping finances is that the earnings of shipping companies are unsteady in the highest degree. This is only natural in view of the risk attached to the shipping business. The shipowner feels the pangs of adversities which affect the many industries and trades served by him. When the shipowner has good times, they are very good; but his bad times are equally bad. And these extremes follow each other in abrupt succession. Only two years ago ocean rates were riding the crest of a tidal wave of war time prosperity. To-day, 5,000,000 tons of shipping are swinging idly at anchor in ports and harbors throughout the world. *Les extrêmes se touchent* and the shipowner must make hay while the sun shines.

The tramp owner feels the effect of this situation more keenly than the liner company; for charter rates, as we have seen, fluctuate considerably more than liner rates, the latter being more or less steadied by rate agreements. On the other hand, the tramp has the advantage of being able to withdraw from operation when business becomes too dull. The liner must "carry on," sometimes even at a loss, unless good will acquired with much effort and at great expense is to be sacrificed.

On pages 541-542 are two tables from "*Fairplay*" of January, 1920, which give the earnings of a selected group of cargo boats over a period of 16 years and the earnings of a selected group of passenger lines for a period of 14 years.

SIXTEEN YEARS OF CARGO-BOAT EARNINGS

Year	Paid-up Capital	Deben-tures, Loans, etc.	Book Value of Steamers	Num-ber of Ves-sels	Tons Gross	Profit on Voyages	Divi-dend on Capital	Per Cent.	Depre-ciation Written Off	Depre-ciation at 5 Per Cent.
1904	7,594,278	3,157,128	10,753,752	303	1,184,353	640,541	277,129	3.64	216,154	622,725
1905	8,577,424	3,775,681	12,353,849	464	1,362,049	762,688	286,005	3.33	238,505	740,901
1906	8,081,800	3,689,142	12,130,285	433	1,336,823	979,545	327,445	4.05	348,651	731,971
1907	9,167,259	4,448,905	13,732,764	490	1,516,401	1,070,257	383,077	4.17	413,390	832,716
1908	9,622,401	4,409,343	14,338,652	533	1,695,837	1,145,387	335,165	3.48	393,696	876,170
1909	9,517,011	4,985,051	13,915,494	508	1,603,341	847,997	179,896	1.89	189,043	837,590
1910	9,457,650	5,548,999	14,610,877	522	1,725,335	842,511	217,651	2.30	290,115	864,187
1911	9,883,584	6,261,588	15,717,739	535	1,833,360	1,471,541	370,061	3.73	506,040	943,088
1912	10,559,843	6,058,067	16,477,354	561	1,981,209	2,869,516	720,558	6.82	1,463,919	1,011,028
1913	10,964,108	5,490,388	16,682,965	598	2,121,427	5,505,850	1,377,615	12.56	3,344,643	1,073,605
1914	10,842,026	4,677,571	15,587,708	569	2,067,403	3,828,093	1,126,069	10.38	1,944,463	1,003,349
1915	14,107,510	6,356,310	17,619,870	585	2,338,868	4,742,103	1,613,673	11.43	2,221,059	1,085,437
1916	14,822,359	8,351,803	16,012,855	499	1,952,503	10,066,863	2,743,102	14.50	3,345,577	987,623
1917	13,566,695	14,505,003	25,773,962	427	1,740,431	5,793,772	2,610,682	19.24	2,493,662	957,051
1918	12,798,871	9,984,371	23,048,026	431	1,461,473	2,574,488	1,554,832	12.15	711,201	823,461
1919	14,215,650	9,315,519	24,681,243	324	1,077,736	3,338,675	1,772,908	12.47	853,128	731,634
Average	10,861,154	6,312,179	16,464,837	492	1,687,384	2,919,300	993,485	9.15	1,185,820	881,431

OCEAN SHIPPING

FOURTEEN YEARS OF PASSENGER-LINE EARNINGS

Year	Paid-up Capital	Deben-tures	Sundry Creditors and Loans	Book Value of Fleet	Sundry Debtors, Investments, Cash, etc.	Number of Vessels	Tons Gross	Dividend Paid	Per Cent
1906	20,340,129	10,891,838	£	33,040,293	£	805	3,174,507	909,015	4.46
1907	18,816,338	12,819,883	.....	31,848,723	.....	672	2,917,709	856,392	4.55
1908	20,475,208	15,980,468	.....	37,640,603	.....	800	3,546,987	934,297	4.58
1909	21,088,368	12,430,700	12,622,243	43,306,771	11,856,852	845	3,885,415	965,264	4.10
1910	21,211,360	14,462,764	10,823,824	43,220,365	12,370,064	874	4,117,147	1,030,104	4.86
1911	22,611,740	16,310,809	11,780,307	46,146,335	15,401,555	921	4,399,806	1,372,124	6.06
1912	22,165,124	14,406,272	13,391,364	46,739,492	13,987,154	884	4,182,828	1,726,861	7.79
1913	27,067,236	18,369,916	14,438,145	56,780,878	19,111,748	920	4,794,398	2,808,030	10.37
1914	30,222,875	17,884,007	15,597,376	60,047,934	18,127,448	969	5,106,496	2,605,182	8.28
1915	31,459,709	19,135,285	20,270,898	57,287,224	29,459,766	895	5,046,845	2,560,283	8.14
1916	32,519,904	19,069,636	29,654,008	62,872,792	42,170,479	869	4,908,021	3,858,846	11.87
1917	37,789,577	17,649,355	43,812,032	81,445,855	43,582,948	925	4,884,243	5,327,249	14.09
1918	40,447,437	17,178,808	66,560,074	97,923,044	54,579,141	1,021	5,286,380	5,071,809	12.54
1919	33,791,883	15,913,724	64,346,186	88,494,822	57,703,378	646	3,802,910	4,283,963	12.97
Average.	27,143,343	16,893,089	.....	56,199,652	.....	860	4,272,836	3,450,681	9.03

We note that in the case of the cargo boats, profits fluctuate from about £640,000 for 393 vessels or £1,632 per vessel (or about 11s. per gross ton) in a poor year to almost £11,000,000 for 499 vessels or £21,977 per vessel (or about £5 11s. per gross ton) in an exceptionally good year. That means a tenfold increase. To be sure, the war exaggerated the fluctuation, but shipping is a worldwide business and it would be hard to find any period of fourteen or sixteen years which has not been disturbed by some war in some part of the world. It should be mentioned here that some of the cargo boats included in these statistics operate at least at times on a time schedule so that the table does not refer to tramps only.

If we compare the dividends paid by the cargo boat companies during the 14 years 1906-1919 and those paid by the passenger lines during the same period, we find the following: The range in the case of the cargo boats extends all the way from 1.89 per cent to 19.24 per cent or again a tenfold increase. Liner rates fluctuate less and the line business requires a more conservative financial policy. The lowest dividend rate during the period was 4.10 per cent and the highest 14.09. Fluctuation far less violent than that of the cargo boat earnings. It is interesting to note that in spite of this difference in the relative stability of the dividend rate, the average for the periods under consideration is just about the same for the two classes of shipping concerns namely 9.15 and 9.03 per cent respectively. This refers to return and capital invested. If however, we compare the return on the basis of net tons a very different picture appears.

The Sub-Committee of the Imperial Defense Committee by which the war risk insurance scheme was framed, accepted, after examination by the Board of Trade, the following estimates of the annual earnings

of British shipping in the ten years ending in the year 1911:¹

Liners.....	£8 per gross ton, £13	4	0 per net ton
General Traders.....	£3 per D W ton, £ 7	10	0 per net ton

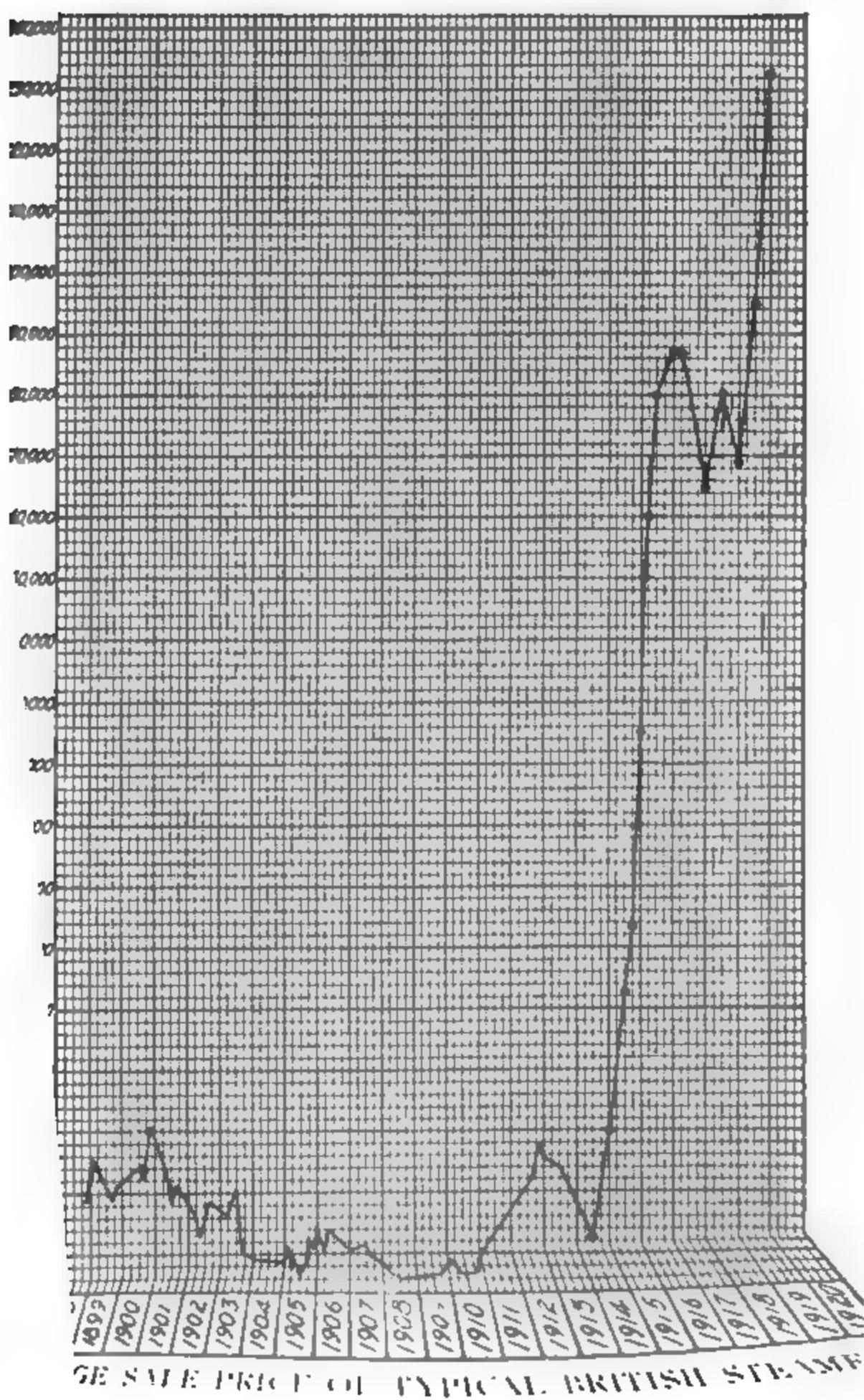
Effect of fluctuating earnings on sales price of vessel.—The extreme fluctuations of steamship earnings are reflected in the sale price of steamers. The chart on page 545 gives the average sale price of a typical British steamer from 1898 to 1920:

The diagram shows that the price rose from slightly less than £50,000 in 1898 to over £60,000 as a result of the extraordinary demand created by the Boer war. This high price of tonnage stimulated the building industry to such an extent that an over-supply of tonnage resulted. This caused a depression which lasted until 1910 and was not fully overcome until the war shortage drove the price of the steamer up to nearly £190,000 in 1916 and to over £230,000 in 1919. "Fairplay," in January, 1920, expressed the belief that the present price is higher than is warranted by the probable movement of freight rates during the next few years. The result of the high price of tonnage during 1918 and 1919 was the same as that noticed in the case of the Boer War, namely an enormous expansion of building activity. It was estimated that at the beginning of 1920, ships of no less than 12,000,000 deadweight tons carrying capacity were under construction, which, figuring an average of three voyages a year, would add to the world's yearly carrying capacity the immense figure of 36,000,000 tons. The inevitable result

¹ From Report by Sir Norman Hill, Secretary Liverpool Steamship Owners' Association, on *The Shipping of the United Kingdom Employed in the Ocean Overseas Trade and the Effect of the War Thereon*.

² *Marine Review*, June, 1920.

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was a deflation of tonnage values almost as drastic as the preceding inflation.

Book values and competition.—One result of this extraordinary advance in the price of ships is a wide discrepancy in the competitive strength of older and younger shipping companies. Companies which acquired their tonnage at the time when the price of ships had reached rock bottom, share in the enormous profits and, in some cases, can "write off" their entire fleet in one year. On the other hand, new companies or companies operating ships bought at high prices, are not in the same favorable position. It is this fact which is frequently pointed out in the discussions of the ability or lack of ability on the part of American steamship companies to compete with the European, particularly British companies.

Relation of stocks and bonds in shipping finance.—The uncertainty of future earnings renders conservative financing imperative. The ratio of stocks to bonds is, therefore, very different in the case of steamship companies and railroad companies. The following table gives a number of interesting facts concerning the International Mercantile Marine Company and a score of leading British steamship lines, showing that the total of outstanding debentures is less than half the paid-up capital and this represents a relatively small percentage of the book value of the fleet plus other investments. In short, British shipping companies tend to be under-capitalized and avoid funded indebtedness. (In this connection it should be remembered that the English debenture resembles more closely our mortgage bond than our debenture.)

WORKING OF SOME REPRESENTATIVE PASSENGER STEAMSHIP LINES IN 1919

	Paid-up Capital	Debentures	Sundry Creditors and Loans	Book Value of Fleet
African Steamship Co.	£ 1,000,000	£ 2,400	£ 1,427,680	£ 1,581,153
Anchor Line (Henderson Bros.)	575,000	379,030	3,751,663	799,061
Australasian United Steam Navigation Co.	445,200	230,835	622,530	565,619
Booth Steamship Co.	800,000	195,030	1,413,254	704,965
British India Steam Navigation Co.	1,657,200	1,686,220	8,482,613	13,442,297
Clan Line	1,450,000	2,683,631	4,372,806	8,868,294
Cunard Steamship Co.	3,835,403	36,702	10,227,632	17,362,325
General Steam Navigation Co.	747,500	549,471	£2,133,157	
Houlder Line	362,500	118,200	866,366	426,548
Indo-China Steam Navigation Co.	495,890	152,150	462,058	671,210
Lamport & Holt	1,800,000	950,000	440,921	£2,500,006
Leyland & Co., Frederick	2,614,350	5,248,794	13,635,241	
Oceanic Steam Navigation Co.	3,750,000	1,902,200	4,612,817	4,200,924
Orient Steam Navigation Co.	417,110	481,900	1,019,758	£2,665,358
Pacific & Orient Co.	6,240,235	1,529,450	8,029,082	£1,482,021
Prince Line	601,495	4,500,000	2,385,760	13,974,373
Royal Mail Steam Packet Co.	5,000,000	975,046	3,632,765	18,914,812
Union-Castle Mail Steamship Co.	2,000,000		6,800,236	14,567,443
Total	£3,791,883	15,913,724	£64,348,186	£88,494,822
International Mercantile Marine Co., New Jersey	\$101,597,500	\$48,817,170	\$41,997,429	\$142,032,588

Including investments.

OCEAN SHIPPING

WORKING OF SOME REPRESENTATIVE PASSENGER STEAMSHIP LINES IN 1919
(Continued)

	Sundry Debtors, Investments, Cash, etc.	Fleet		Dividend Paid £	Per Ct.
		Num- ber of Vessels	Tons Gross		
African Steamship Co.	1,145,611	27	96,469	100,000	10.00
Anchor Line (Henderson Bros.)	5,114,124	12	57,651	67,875	11.80
Australasian United Steam Navigation Co.	758,849	17	46,405	44,520	10.00
Booth Steamship Co.	2,354,507	22	72,149	41,500	5.18
British India Steam Navigation Co.				149,864	9.04
Clun Line				150,500	10.38
Cunard Steamship Co.	11,624,552	21	358,225	302,080	7.87
General Steam Navigation Co.	362,717	31	26,196	56,371	7.54
Houlder Line	1,208,005	11	55,871	33,000	9.10
Indo-China Steam Navigation Co.	2,574,038	40	90,246	153,726	31.00
Lamport & Holt	1,721,336	36	207,196	148,000	8.22
Leyland & Co., Frederick	8,631,655	26	160,864	1,126,717	43.00
Oceanic Steam Navigation Co.	9,455,339	37	356,906	637,500	17.00
Orient Steam Navigation Co.	736,641	5	60,171	40,662	9.74
Pacific & Orient Co.				727,769	11.66
Prince Line				120,299	20.00
Royal Mail Steam Packet Co.	6,023,300	46	260,644	332,000	6.64
Union-Castle Mail Steamship Co.	5,887,162	43	296,566	151,600	7.58
Total	£17,741,378	641	2,602,010	4,341,062	12.07

In all cases the debenture debt is far below the book value of the fleet. Another interesting fact revealed by this table is that in some instances the fleet does not represent the major portion of the company's assets, as notably with the Cunard Steamship Company, the Leyland Line, the Oceanic Steam Navigation Company.

Methods of acquiring capital.—We now turn to the question of how steamship companies acquire the necessary capital. To be sure, no definite rule can be laid down, but at this juncture in the marine history of the United States where the country is faced with the problem of financing the sales of approximately 10,000,000 tons, a brief analysis of financial methods by which Great Britain has succeeded in the past should prove both timely and valuable. We have mentioned before that most of the tramp tonnage of Great Britain is financed by the issue of 64 shares per vessel, the majority of which is held by the vessel owner while the remainder is sold to the general, but principally the exporting public. The usual system is one which assures great incomes to the managing owners by granting them in payment of their managerial services 2 per cent of the gross trade earnings. This, added to the dividend declared on the majority shares—33 out of 64—which are held by the managing owners, guarantees a comfortable return if not a large one. On the other hand, the minority stockholder has to be satisfied with more meager returns. But since the minority stock is usually held by exporting manufacturers and shipping merchants who are vitally interested in low shipping rates, the minority is satisfied with these meager returns on their shipping investments, feeling compensated because of expanded overseas business due to low freight rates. Frequently the contracts with the

ship's managers and stock
forbids that it : : :
distributed to : : :
the other hand that it
soon as the opportunity c ers.

rs contain a clause which
or loss of vessel be dis
ki g it compulsory on the

reinvested in a new vessel as

**Wide distribution of : t : steamship securities hold
ings.**—British passenger li rs, on the other hand, have
grown largely by reinve i earnings in additional
ships. Their shares are widely scattered, as is indicated
by the fact that five of the leading British shipping com
panies have over 44,000 shareholders with an average
holding of only \$2,500 each.

This wide distribution is aided by the low denomina
tion of British shipping shares which is usually one pound
sterling. The interest in marine insurance is so great that
when new securities are offered for public subscription
they are frequently oversubscribed to the extent that the
promoters are enabled to purchase more tonnage than
previously contemplated. "In connection with the re
cent public issue of 1,000,000 shares of one of the newer
English shipping companies, no less than 8,900 letters
of regret over inability to allot the amount applied for
had to be sent by the syndicate manager."

American methods.—It should be noted here that the
American method of selling shipping bonds and shares
direct to the public through the underwriter, has only
recently been adopted in England.

As far as ship mortgage bonds are concerned, English
marine practice has evolved numerous channels for their
distribution. They were described by Mr. John E.
Barber of Harris Forbes and Company, in an address de

livered at the National Foreign Trade Convention held in San Francisco in April, 1920:¹

"A substantial amount of English ship financing is done through brokers or banks specializing in shipping mortgages. Such mortgage loans are distributed privately in varying amounts. There are also several mortgage concerns which lend money against ships at rates of interest usually about 1 per cent above the bank rate. Such firms accept bills for the mortgage loan, a certain proportion of which fall due every six months.

Investment trusts specializing in shipping stocks and mortgages have provided another important method of financing English shipping enterprise. The debenture bonds of institutions like the British Maritime Trust, Ltd., and the British Steamship Investment Trust, issued against a diversified list of shipping securities enjoy a broad market and are highly regarded by conservative investors.

Moreover, new institutions are constantly being organized to aid British shipping. The Mercantile Marine Finance Corporation, Ltd., recently incorporated with a capital of \$5,000,000, represents practically the first company organized exclusively for financing ship building, particularly the smaller shipbuilders who are unable to float public issues. Also, one of the English oil companies has just created a subsidiary known as "Tankers, Inc.," with an initial capital of \$7,500,000 for the exclusive purpose of financing the purchase and construction of tankers, which are subsequently to be chartered to the parent company.

The issue of shipping bonds and shares direct to the public through underwriters after the American fashion has been adopted only recently in England, because of the difficulties experienced by some of the newer shipping companies in financing their needs through the channels described above. Securities in small denominations, usually £1 sterling, are offered for public subscription, and such is the revival of interest in marine investments that huge over-subscriptions often result, enabling the promoters of shipping companies to purchase more tonnage than previously contemplated."

European practice.—Also the experience of Holland and Norway is valuable:

"Holland originated the Marine Mortgage Bank for lending money

¹ See *Nautical Gazette*, May 22, 1920, p. 774.

to shipbuilders and shipowners exclusively against ships. This type of institution has since been copied in Germany, Norway, Sweden, Denmark, and Belgium. Debenture bonds secured by mortgage loans restricted by law to 60 per cent of the estimated value of the ships pledged, are distributed to investors. The debenture issues of twelve marine mortgage banks bearing interest rates varying from 4½ per cent to 6 per cent are freely traded in on the Amsterdam Stock Exchange. Although introduced only twenty years ago these banks have met with astonishing success and at present have loans outstanding on ship mortgages aggregating \$30,000,000.

"In Norway, ship loans are treated as commercial loans in this country, and there is no class of banks specializing in lending against ships as security. Such loans are usually made for a period of six months, occasionally a year, and are renewable. They are protected by an assignment of part of the prepaid freights. Although made by the bank, directors and outside capitalists often participate in the underwriting. Marine Equipment bonds, as we know them are not issued in Norway. A newly organized shipping company may issue its shares directly to the public, or through an underwriting bank. These shares are in bearer form and have dividend warrants attached, which, like coupons, are cut off as the dividends become payable. Such shares are extremely popular, and it has been possible to distribute throughout Norway the shares of the smaller companies, and even shares in individual ships which are partly owned and entirely managed by the masters, mates, and engineers who operate them.

"The experience of foreign maritime countries demonstrates that it is possible to popularize shipping investment irrespective of the size of the borrower or his sphere of activity."

Reforming the ship mortgage law.—In the United States, the sale of vessel mortgage bonds is at present handicapped because the law places supply and repair bill liens. Chairman Greene of the House Merchant Marine and Fisheries Committee, in order to relieve the situation, has proposed a bill the most essential features of which are as follows:

- (1) No mortgage to be valid unless securing a bona fide indebtedness;
- (2) Every mortgage to be recorded with the Collector of Customs of the home port of the ship;
- (3) The mortgagor to disclose to the mortgagee all obligations against the vessel to be mortgaged, and not to incur any contractual liens without the consent of the owner of the mortgage other than wages of crew and stevedores, general average claims and salvage;
- (4) Jurisdiction to be vested in the United States District Courts to impose the penalties provided and to foreclose such mortgage;
- (5) Liens for repair to be subordinate to mortgage. In general, all claims under contracts to be subordinate to the mortgage, but claims under torts to be superior to it;
- (6) The mortgage may be subordinated to any lien by agreement with the owner of the mortgage.

These provisions are of interest, although, as is explained in Chapter XXX, not all of them were incorporated in the Merchant Marine Act, 1920.

The experience of Great Lakes bankers.—In judging this proposal, the experience of the bankers of the Great Lakes region who have handled more than \$100,000,000 worth of vessel securities constitutes an important precedent and will serve as a valuable example. The Marine Review of November, 1919, explains the system as follows:

"The development of the Great Lakes plan has been a process of growth over a period of 20 years. It is not a fixed formula, but rather a composite practice existing

in the provisions of a host of mortgage deeds of trust, some of which differ in detail, but all of which are based upon the same accepted underlying principles of safety.

"The plan includes numerous provisions for raising a solid barrier against risks in ship financing, but the following salient features, found in most mortgages in one form or another, are recognized as the chief safeguards under the Great Lakes method of financing:

"First: The mortgage covers but one-half of the value of the property.

"Second: Insurance to the full insurable value of the property is carried by the owner and controlled by the trustee.

"Third: When the mortgage is placed, the owner must guarantee the ship to be completely free from mechanics liens or other encumbrances.

"Fourth: The company agrees not to declare any dividends on common stock until bond interest is provided for out of earnings.

"Fifth: Provision is made for supplying of periodical reports on business by the company to the trustee.

"Sixth: A limit either as to amount or as to percentage of the mortgage, is fixed for supply and repair indebtedness, running above which constitutes breach of mortgage and is cause for foreclosure.

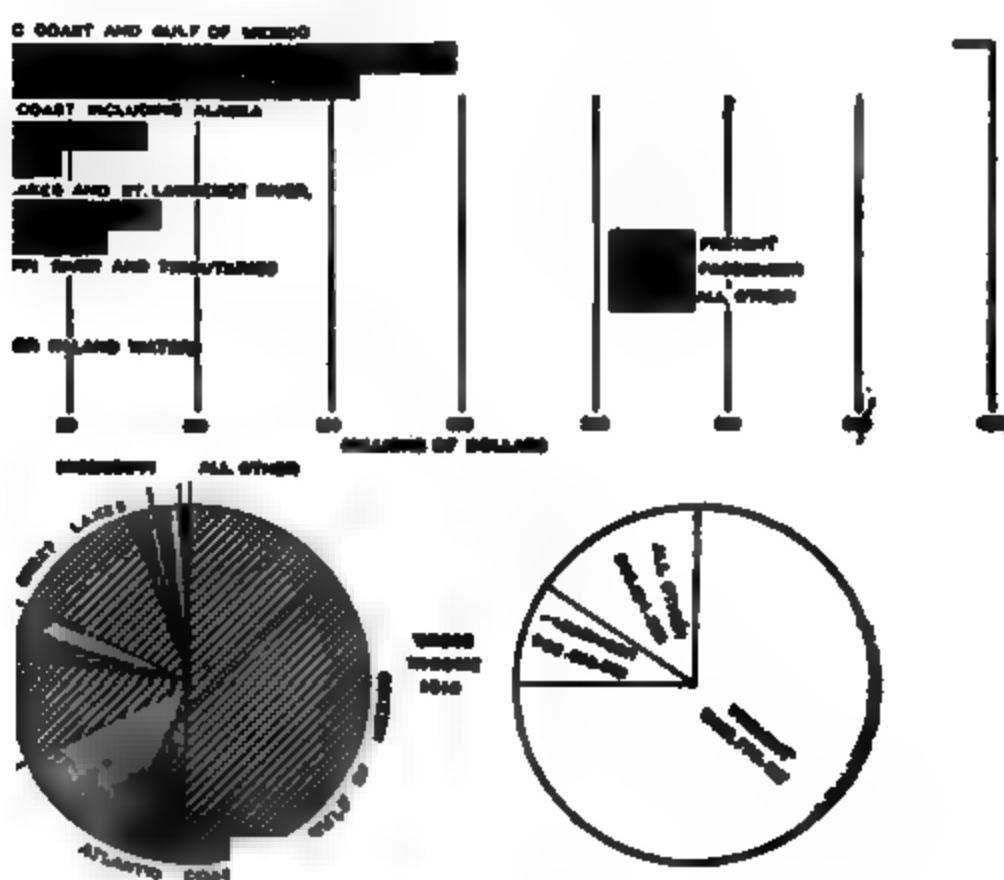
"Financial and legal authorities in the Great Lakes region hold that these fundamental safeguards remove the moral hazard surrounding marine risks and place ship mortgage securities, even under the present law, upon a plane comparable to the best types of issues ashore."

However, it may be said that important differences exist between Great Lakes shipping and ocean shipping

arise out of the limited expanse of the Lakes and homogeneous nature of business interests in that section as compared with the world-wide ocean trade. Nevertheless, the lesson taught by the Great Lakes success should not be ignored.

Income of American shipping.—The following diagram, prepared by the Bureau of Census¹ shows the income of vessels under American registry for 1906 and 1916, based upon a geographical basis and upon the basis of source from which the income is derived, whether freight, passenger or other business:

INCOME OF VESSELS, BY DIVISIONS AND BY OCCUPATION: 1916 AND 1906



"Transportation by Water, 1916," Washington, 1920, p. 58.

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PART IX

AMERICA'S MERCHANT MARINE

CHAPTER XXVIII

HISTORY OF THE AMERICAN MERCHANT MARINE AND RECENT LEGISLATION

Early Growth.—The history of the American Merchant Marine has been often told, and we need only to refresh our memories on some of the chief incidents which have a bearing on present problems.

When the nation was born, the merchant marine was in a sorry plight. Promising developments of the colonial period had been checked by the Revolutionary struggle, and in 1789 the entire fleet registered for foreign commerce amounted to only 123,893 tons.

The tariff legislation of the period favored our ships by a reduction of duties by 10 per cent for all goods imported in American vessels. The Napoleonic struggle in Europe then impending, and soon to break out and engage the energies of Europe for the next decade and a half, stimulated our shipping. Tonnage grew to 667,107 in 1800. Our own trade had been handled almost entirely in our own vessels. and we absorbed a large carrying trade from the West Indies to Europe, and a considerable transshipment trade arose.

Development of shipping checked.—Things went well until combatants in Europe through their blockade began to interfere with our shipping. Vainly we protested. Our protests unheeded, we were led into the War of 1812 of glorious memories and vague and uncertain results. When peace settled upon the world we were confident of the strength of our position. The preferential treatment of our shipping was abandoned

through the legislation of 1828, and commercial ties removed all special advantages we had enjoyed.

Our merchant marine developed more slowly. Two factors retarded the loss to the American Merchant Marine. One was the opening in 1824 of Erie Canal, which gave to New York its prominence as a shipping center. The other factor was thecession of Florida by Spain in 1819, which substituted a fine timber supply—mostly oak—for the rapidly diminishing supply of the northern central regions.¹

Conditions of competition were changing. Steam was beginning to be applied as motive power. Great Britain encouraged the building of steamships by system of subsidies. The Cunard Line owes its beginning to this policy. To some extent the United States met this competition, and in the forties several steamship lines were subsidized. In 1847 the Government made its contract with the Collins Line, a well-known rival of the Cunard.

The clipper ship era and its subsequent decline.—A few years beginning with 1843 when the first clipper ship—*The Rainbow*—was designed, there was a splendid development of American shipping. In 1850, the total tonnage of merchant shipping, including steam vessels in the United States was 3,535,454 tons. In the same year, Great Britain had a merchant marine totaling in the home and foreign trade, 3,565,133 net tons. From 1846-1857 American shipping engaged in foreign trade grew from 943,307 tons to 2,268,196 tons. It

¹ See *America's Merchant Marine*, Banker's Trust Company, pp. 11 and 12.

² See *America's Merchant Marine*, Banker's Trust Company, p.

this period that William Brown Meloney in *The Heritage of Tyre*¹ writes: "The United States was the miss of the seas. Ship for ship—clipper or ordinary merchantman—the United States dominated the commerce of the world; but as 1857 was the evening of the opers it was the afternoon of our merchant marine—eign commerce." Shipbuilding reached its climax in 1851, when no less than 583,450 tons of shipping were launched from American yards. In the next few years even before the Civil War there was a marked ing off. This followed the withdrawal of the subsidies and encouragement which the government had en to shipping. The Civil War merely accelerated decline of American shipping, which had begun six rs earlier. Confederate cruisers between 1861 and 65 burned or appropriated 110,000 tons of American pping, and drove 751,595 under foreign (mainly tish) colors. Thus the seagoing fleet, which in 1861 ounted to 2,496,894 tons and carried 65.2 per cent of exports and imports, had shrunk in 1866 to 1,387,756 s, which carried only 32.3 per cent of the foreign de.

The loss was steady until 1898, when a minimum tonnage of 726,213 was reached. As to carrying American de in American ships, the lowest point was reached 1900, when only 8.2 per cent of our foreign trade was ried in American ships.

The decline in American shipping was co-incident h the rise of iron and steel ships. The supremacy American shipping of clipper ship days was largely ed upon the abundance of raw material and skill ship construction. With the appearance of iron mate ls, this supremacy passed to Great Britain. For
2. 89.

many years British shipyards enjoyed not only this advantage, but also a lower wage rate, and large scale production.

Vain efforts to revive American ocean shipping.— During the thirty years before the war the question of stimulating the merchant marine was constantly before the public, but little was accomplished. The only positive legislation was the Postal Aid Act of 1891, under which arrangements were made with American lines for the carrying of mails, at rates somewhat higher than contract rates.

In recent years, even before the war wrought a complete change, conditions had taken a turn for the better, and many of the adverse factors which had prevented the growth of an American merchant marine had either been eliminated or else converted into favorable influences.

Awakening interest.— Thus the interest in the internal development of the country is no longer all-absorbing and no longer entirely precludes the interest in the overseas trade. The large amounts of capital which have been invested in American shipping by such firms as the Standard Oil Company, United Fruit Company and the United States Steel Products Company show new needs and a new trend of thought.

The development of our steel industry has brought the price of ship plates somewhat below the figure quoted by British manufacturers. This benefits especially the manufacturers of standard tramp steamers. Furthermore, new railroad lines have been constructed which act as feeders of our shipping industry. This is especially true of coal-carrying railroads. Virginia

Steam coal of excellent quality can now be delivered at low cost at Atlantic seaports, such as Norfolk, Newport News and Charleston. This coal is able to compete with the Australian, Japanese and Welsh coal which used to control the Far Eastern market and tends to reduce the return freight rates on imported nitrates, as well as on copper, tin, iron ores and similar commodities. The trade also invaded Europe and seems to be getting a firm foothold there.

The first evidence of a desire on the part of Congress to encourage American shipping on the high seas was the insertion, in the Panama Canal Act of 1912, of a clause authorizing the naturalization or admission to American registry and flag of foreign-built vessels under five years of age, and granting the free entry of materials used in the construction and equipment of ships. This clause reversed the national policy of a hundred years. In the face of this invitation, two years went by without a single foreign-built ship seeking the American flag. No better evidence could be desired of the higher cost of operation imposed by American policy than in this act.

The willingness of Congress to encourage shipping was further proved by the inclusion in the present tariff act of a clause allowing a discount of 5 percent in the customs duties on goods imported in American bottoms. We are reminded of the early policy of 1789 which had produced such marvelous results, but administrative interpretation and the Supreme Court's decision declaring it unconstitutional made it non-operative, and now the new law has superseded it.

New conditions
European

by the European war.—The new conditions and oppor-

tunities which Congress had to take into account. Thus, on August 18, 1914, an act was passed which eliminated the five-year age limit and also the requirement of "fitness to carry dry and perishable cargo"; in other words, removed all the modifications of the Panama Canal clause admitting foreign-built vessels to American registry. Thus the doors were opened wider still. Ships entering American registry were allowed to retain foreign officers, which reversed the policy that the American flag could fly over no ships not officered by Americans. As a result some hundred and seventy-five to two hundred steam and sail vessels have come under the American flag. A large percentage of the boats was already employed in American trade, most of them the property of American citizens before their admission to American registry. The motive of shipowners in transferring their ships to American registry at the outset of the European war was to secure the protection of the flag of the most powerful neutral. The flag and the more favorable marine insurance rates constituted a generous subsidy to these ships for the time being.

The Government also established a War Risk Bureau to insure American vessels during the war. This action afforded American vessels the same protection in the war zone as was given to vessels of other nations through the establishment of similar institutions.

Little real encouragement can be found in the results of the Emergency Act of 1914, for in spite of the great inducements resulting from war conditions, there came a significant halt in seeking American registry. Fewer and fewer vessels applied for permission to fly the American flag.

The Ship Purchase Bill.—Following the ship registry

ict, the preferential clause of the tariff and the War Risk Bureau, ambitious projects appeared to develop American shipping in foreign trade. At that junction a severe blow was struck by the administration's Ship Purchase Bill. In this, the Government announced its intention to operate ships in foreign trade under government control. Without leaving commercial and financial enterprise time to recover from the initial shock of the war, the Government took this unfortunate form of expressing its discontent with the failure of private shipping concerns to avail themselves of the momentous opportunity to build up an American merchant marine. The only ships that could have been bought were the interned German ships in our ports, which were needed to carry cotton to Germany, not yet cut off by the blockade. But the British objection to the purchase of German ships caused the administration so to veil its intentions as to ships and services that it finally appeared as if the administration were asking for ships from unnamable sources to institute unnecessary and superfluous services. The bill was defeated in February, 1915.

Seamen's Law.—Another unfavorable Government policy was introduced by the enactment of the Seamen's Law. This bill had once before passed both the House and the Senate, but had been vetoed by President Taft just before the close of his administration. In the Presidential campaign of 1912 both parties committed themselves to the passage of the Seaman's Bill. The Seamen's Bill accordingly was introduced into the Sixty-third Congress and after almost two years of consideration was unanimously adopted by both Houses of Congress. It became effective for American vessels November 4, 1915, and has applied to foreign vessels since

March 4, 1916. The Attorney-General has decided that the severe requirements as to life-saving equipment and the manning of such equipment do not apply to foreign vessels owned in countries with which the United States still has reciprocity treaties. American ships thereby are placed under a further handicap.

The Seamen's Law contains the stipulation that on a seagoing steam vessel of one hundred tons or over 75 per cent of the crew in each department must be able to understand any order given by the officers. This paragraph prevents the employment of Asiatic crews on American vessels and thereby makes it practically impossible for American ships to compete in the Pacific with Japanese vessels on which the Asiatic crews naturally understand the language of their officers.

The enforcement of this Act is in the hands of the Secretary of Commerce. Through the construction which he has put on the language of this paragraph (section 13), he has considerably mitigated the hardships placed upon American shipowners.¹

Some important provisions of the Act.—According to this law, the deck crew of a seagoing steam vessel of one hundred tons or over is to be composed in the first year after the passage of the law of forty per cent of rated able seamen; in the second year, of forty-five per cent; in the third year, of fifty-five per cent; and thereafter, of sixty-five per cent exclusive of officers and "apprentices." Able seamen are rated as such only after three years' service at sea and upon certification of this service and of their physical capacity by the Department of Commerce. Attempts are being made to modify this

¹ See Andrew Furuseth's protest (Senate Document No. 694).

The Rowe Bill is the most prominent.¹ If would reduce the time of training very consid-
The rapid increase in the number of ships under the American flag has created a new situ-
lically different from the one prevailing when en's Bill was passed. Change of circumstances
es change of law.

ost disputed section of the Seamen's Act is that tually states that American seamen in all ports gn seamen in American ports may desert at will and one-half of their earned wages. The

Marine Act, 1920, contains a provision (section e same nature. By a decision handed down on , 1920, the Supreme Court declared this statute : to foreign vessels in American ports. The of the Seamen's Act claim that this section is responsible for the gradual equalization of sea-
ges of all nations. It is claimed that Japan and ccepted, all seafaring nations have had to raise s of their seamen to within fifteen per cent of ikan wage level.² Mr. Rosseter, former Direc-
operations of the Shipping Board, admits that its effect upon the wages paid to foreign sea-
Seamen's Act has been beneficial to the Ameri-
hant Marine. But it is difficult to determine xtent abnormal war conditions are blurring the

Undoubtedly depreciation of foreign money he international exchange situation, changes the general attitude of labor, etc., have con-
nuch toward raising the wage level of foreign

R. 9692; for discussion of its provisions see *Hearings on
the Development of an American Merchant Marine*, pp. 1560ff.
Political Gazette, March 27, 1920.

seamen. It remains to be seen whether the permission to desert is a real blessing or a boomerang. It should be remembered that the former strict prohibition of desertion, the so-called "involuntary servitude" as the advocates of the Seamen's Law choose to call it, was the outgrowth of conditions elemental to shipping, which no law can change. "It was enacted not on behalf of the masters of vessels, nor of seamen, nor of ships, nor of owners, but in the just interest of all. It was a master's assurance against the desertion of a crew in a foreign port where other sea labor was unobtainable; it was a seamen's assurance against being beached because of a master's whim or parsimony or because a master could ship men at a smaller wage—a sailor's inviolable guarantee from the Government that a vessel must bring him back from the ends of the earth to the port of departure or another port in the United States; it was a vessel's assurance that she would not be left helpless; it was an owner's assurance that his property would be reasonably safeguarded at all times and that he would be permitted to perform his legal contracts."¹

The subsequent development centers around the work of the United States Shipping Board which will be described in the following chapter.

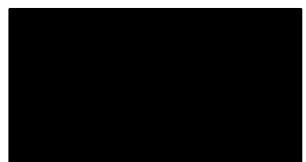
¹ See William Brown Meloney, *The Heritage of Tyre*, p. 147.

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CHAPTER XXIX

THE WORK OF THE UNITED STATES SHIPPING BOARD

War problems displace peace conditions.—At the beginning of 1917 the outlook for the American Merchant Marine was blurred and confused. Whether the measure which had been adopted would promote shipbuilding in a great degree was at least dubious. Questions of costs of construction and operation were gravely weighed. But when the United States declared war on Germany, these questions were brushed aside by the imperative need for ships. The exigencies of warfare require results, and a nation at war does not stop to count the costs.

The entrance of the United States in the World War, in April, 1917, did not find the industries of the country wholly unprepared for the emergency. For more than two and half years ever-increasing quantities of munitions and supplies had poured out of our great seaports; agriculture and industry had largely adapted themselves to the situation. The new emergency meant additional strain upon their capacity; but the ground had been broken and the foundation was laid.

But this was not the case in the shipbuilding industry. Before the war this important branch of American enterprise had been sadly neglected, so that it appeared like a pygmy beside its big brothers, the iron and steel industry and the war itself had not given the stimulus which other branches had experienced. The declaration of war meant more for American shipping and shipbuilding than for any other industry.

Demand for ships.—For no other product of hu-

energy had the demand grown as a result of the war to anywhere near the extent as it had for ships. The realization of this fact which, by now, has become the common property of the American people could not fail to stir into life the potential forces of this country as a builder of ships. We saw in the previous chapter that the year 1916, though full of splendid opportunities, had failed to awaken the dormant energies, lulling them rather, as it were, with such narcotics as threatening government ownership and a Seamen's Bill.

The entry of America into the war changed all this at an instant; the spell was broken immediately. The two main deficiencies had been lack of men and scarcity of money. The empty purse of the shipyard owners was filled as never before out of Uncle Sam's cornucopia. The youth of the land that in former times had despised or dreaded the life of the sea, now, prompted by patriotic enthusiasm, rapidly filled the ranks of the Navy, the Naval Reserve and the Merchant Marine and swelled their numbers to hitherto unheard-of proportions.

There is a good deal of romance in this story of a hundred million people on a billion dollar land suddenly remembering that "Old Glory" once had flown from mastheads in every port of the globe — this metamorphosis of dreary wastes of marshes into humming shipyards, turning out wooden and steel ships at a rapid pace, the transformation of landlubbers into sturdy seamen, and, above all, the change of front which took place in the consciousness of a whole people.

The question of government ownership and operation. —Without wishing to belittle the wonderful achievements which private enterprise accomplished in ship construction and ship operation during the trying times of the

war, we confine ourselves in this chapter to the story of the United States Shipping Board, that Government agency in whose hands was placed the task of co-ordinating all available resources and energies of the nation in one great effort to offset the ravages of the submarine and to supply the unprecedented amount of tonnage required to bring the war to a successful issue.

We do not need to discuss here the much-debated question of Government ownership and operation *versus* private ownership and operation. For business and Government are at one as to the abstract merits of the case. Both agree that private ownership and operation is far more efficient. In war time and during the period of reconstruction abnormal conditions prevail, which must be met with special measures. There may be differences of opinion as to how far these special measures have to deviate from the normal and violate generally accepted principles. But with the return to normal conditions these difficulties will disappear and private ownership and operation will be restored.¹

Creation of the Shipping Board.—The legislation which created the United States Shipping Board is contained in the Shipping Act of September 7, 1916. The Emergency Fleet Corporation, the executive adjunct of the Shipping Board, was organized April 16, 1917, with a capital of \$50,000,000. In addition to this, during the war, various emergency powers in the control of shipping were conferred upon the President, and through him upon the Shipping Board or the Emergency Fleet Corporation. These powers covered a wide range and included the authority to take over the output of any industrial plant or to take over the

¹ Those who wish to make a detailed study of the arguments for and against Government ownership and operation are referred to "The American Merchant Marine" by E. M. Phelps, Debators' Handbook Series, The H. W. Wilson Company, New York, 1920.

whole plant if necessary, to requisition ships either completed or under construction, to construct and to operate ships with no other conditions than the limits of the financial appropriations, to commandeer property for developing housing facilities, and to control the transfer of vessels to foreign ownership. It is on the basis of these emergency powers—chiefly the Emergency Shipping Fund Provision of the Urgent Deficiencies Act of June 15, 1917—that the Shipping Board has carried on its work, rather than on the basis of the "Shipping Act, 1916."

Organization of the Shipping Board.—It would lead us too far to give a detailed description of the huge organization which had to be built up in order to carry out the many tasks which were entrusted to the Board. The task was worthy of American organizing ability.

The efforts of the Board may be roughly divided into the immediate problems of ship construction and ship operation on the one hand, and the multitude of duties which indirectly bear upon this program, such as port and harbor improvements, legal adjustments, recruiting service, labor conciliation, etc. These indirect functions were performed by the Board Organization while the Emergency Fleet built and operated the ships.

Ship construction; program and achievements.—The original construction plan was strictly a war program in volume and details of construction. The Armistice found the Board in the midst of the execution of this program, which had to be curtailed and modified to do justice to changed conditions. The table on page 574 shows the original program and the changes which had to be made.¹

¹ From Report of Chairman Payne to Senate Committee on Commerce.

OCEAN SHIPPING

PROGRAM OF EMERGENCY FLEET CORPORATION

Class	Original Program		Cancelled		Active	
	Number	Dead-weight Tons	Number	Dead-weight Tons	Number	Dead-weight Tons
Requisitioned Steel	419	2,963,400	35	276,140	384	2,687,286
Contract Steel	1,727	11,756,920	422	2,884,476	1,305	8,872,446
Contract Wood	1,017	3,062,200	425	1,156,700	692	1,896,500
Contract Composite	50	175,000	32	122,000	18	63,000
Contract Concrete	43	302,000	31	228,500	12	73,500
Total	3,256	18,249,526	945	4,856,816	2,311	13,892,711

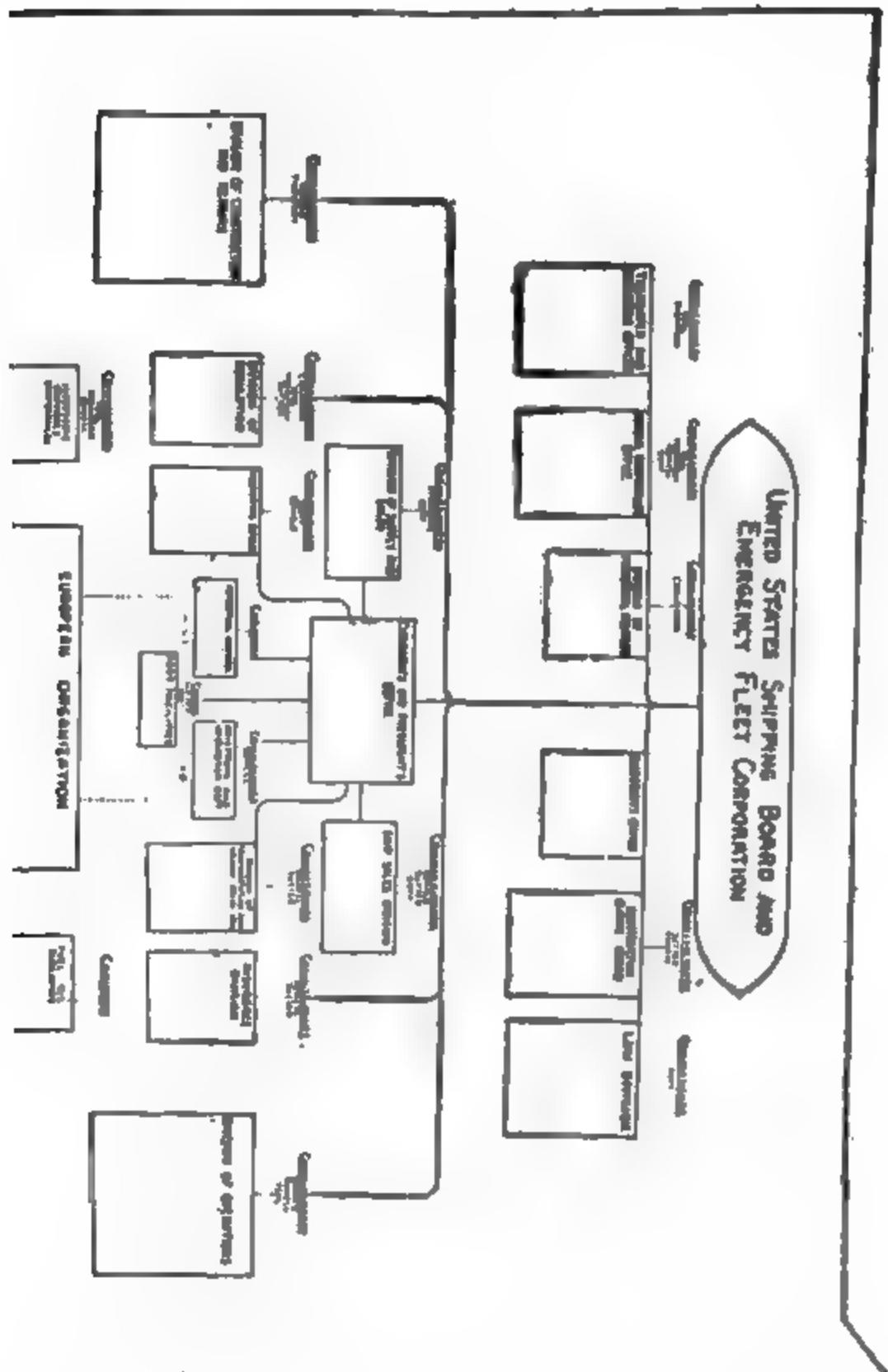
The following table shows how far the active program had been completed by June 5, 1920:

Total to Date	Keels Laid Number	Launched Dead-weight	Number	Delivered Dead-weight
	1,278	8,597,246	1,172	7,049,246
Contract Steel	394	2,687,286	374	2,685,806
Requisitioned Steel	18	63,000	18	63,000
Composite	689	1,885,250	599	1,886,250
Wood	12	73,500	7	36,000
Concrete			6	23,500



WORK OF THE U. S. SHIPPING BOARD

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It appears that, on that date, 30 keels remained to be laid. 151 ships had yet to be launched, and 272 ships of 2,205,108 D.W. tons had not yet been delivered. Rear-Admiral W. S. Benson, present Chairman of the Shipping Board, expressed the hope that the program would be completed some time during 1920.¹ The completed fleet, according to a circular issued by the Shipping Board, will represent a line of vessels 158 miles long, which, if steaming a mile and a quarter apart, would reach from New York to Southampton—America's Bridge of Ships. The total deadweight tonnage of these vessels is equal to the carrying capacity of 388,363 freight cars of thirty-five tons each. Altogether 800,000,000 rivets will have been used.

The following statement regarding the Shipping Board fleet was made by Admiral Benson on July 19, 1920, in a speech delivered in the Pan-American Building, Washington, D. C.:

"The total seagoing merchant marine of the United States at June 30, 1920, consisted of 3,404 vessels of 11,278,741 gross tons, or approximately 16,918,212 deadweight tons.

"Of this total the Shipping Board now owns 1,502 vessels of 6,238,948 gross tons, equivalent to 9,358,421 deadweight tons. Of this total owned by the Shipping Board 673 vessels of 2,521,712 deadweight tons are vessels of less than 5,000 deadweight tons each.

"Vessels between 5,000 and 6,000 deadweight tons number 145, or 754,853 deadweight tons.

"The tonnage at present controlled by the Shipping Board, exclusive of the vessels operated by the Army, are distributed in the various trades as follows:

¹Address delivered at National Marine League Dinner, April 13, 1920.

39%	in Northern European
10%	Southern "
3%	African
16%	Trans-Pacific
11%	South America
9%	West Indies and Caribbean
7%	Domestic Service
3%	Operating Between Foreign Ports

"Of the steel vessels owned by the Shipping Board engaged in these services, 615 are operating from North Atlantic ports, 62 from South Atlantic ports, 184 from Gulf ports, 113 from Pacific ports, 74 are employed in coastwise service, 63 are operating between foreign ports, 121 are at present unallocated to any designated berth line service. These latter virtually constitute the tramp service of the fleet. Four vessels are operating from unspecified home ports.

"Of the total operating on the North Atlantic District, 273 vessels are operating from the port of New York, 133 from Norfolk, 101 from Baltimore, 75 from Philadelphia, 28 from Boston, and 5 from Portland, Maine.

"The total deadweight tonnage operating from North Atlantic ports is 4,304,003. Of the total tonnage operating in berth liner service, 50% of the deadweight tonnage is operating from the Atlantic ports.

"The total tonnage operated by the U. S. Shipping Board, excluding vessels operated by the Army and Navy, on June 20, 1920, numbered 1,490 vessels, the deadweight tonnage of 9,223,894. (12 vessels operated by Army.)

"Of the 1,502 vessels owned and controlled by the Shipping Board on July 1, 1920, 1,394 were cargo vessels, 27 were cargo and passenger vessels, 63 were tankers, 15 re-

frigerators and 3 transports. The cargo and passenger vessels include 2 vessels chartered from Peru, on which the Shipping Board has an optional agreement of purchase.

"Included in the total number of vessels owned and controlled on July 1 are 267 wood and composite vessels and 4 concrete vessels.

"At the close of the fiscal year June, 1920, 194 of these wood vessels were in active service and 73 were in charge of managing caretakers and withdrawn from operation."

British and American ship-building record compared
—A comparison with the production in British yards is significant. Prior to the war the maximum annual tonnage launched in the United States in recent years was reached in 1910, when approximately 500,000 D.W. tons left the ways. The maximum in Great Britain was attained in 1913 with the launching of 3,000,000 deadweight tons. The yards in the United States accomplished this result in the first six months of 1918, and in the year 1919 more than doubled the British record. The *Third Annual Report* of the Shipping Board contains on p. 59, the chart given on page 579 which shows the comparative progress of the merchant marine tonnage of the United States and Great Britain, expressed in deadweight tons:

To be sure, the year 1920 witnessed the return of Great Britain to its former place as the premier shipbuilder of the world. Figures published in the early part of July, 1920, showed Great Britain leading by more than a million and a half gross tons. The reason is simple. As the Government ship construction program is approaching its end, American shipyards are partly being dismantled and some of the remaining ones are lacking orders. The tonnage building for private account is not big enough to fill the gap left by the completion of the Shipping Board fleet. In this

BUILDING PROGRESS OF UNITED STATES AND
GREAT BRITAIN

UNITED STATES	GREAT BRITAIN
D.W.T. —	1789
D.W.T. —	1794
D.W.T. —	1796
D.W.T. —	1800 (1801)
D.W.T. —	1810
D.W.T. —	1820
D.W.T. —	1830
D.W.T. —	1840
D.W.T. —	1850
D.W.T. —	1860
D.W.T. —	1870
D.W.T. —	1880
D.W.T. —	1890
D.W.T. —	1900
D.W.T. —	1910
D.W.T. —	1914
D.W.T. —	1918
D.W.T. —	1920 EST.

connection it may be fitting to take up in general the effect which the World War had upon shipping losses and construction. But 1920 launchings gave the United States a lead of 20 per cent over the United Kingdom.

The war's effect on world shipping.—The enormous progress made by this country in merchant ship production and the marine losses suffered by the world's maritime nations during the World War, and finally the provisions of the Peace Treaty, have completely shifted the equilibrium of maritime power as far as merchant tonnage is concerned. According to *Lloyd's Register of Shipping*, the losses of merchant steamers of the principal maritime nations during the World War from August 4, 1914, to the Armistice of November 11, 1918, were:

Country	War Losses Gross Tons	Marine Losses Gross Tons	Total Gross Tons
United Kingdom.....	7,753,311	1,032,779	8,786,090
British Dominions.....	169,712	99,866	269,578
American.....	343,090	187,948	531,038
Belgian.....	85,842	19,239	105,081
Brazilian.....	20,328	10,951	31,279
Danish.....	210,880	34,422	245,302
Dutch.....	201,797	27,244	229,041
French.....	722,939	84,138	807,077
Greek.....	349,661	65,014	414,675
Italian.....	745,768	115,669	861,435
Japanese.....	119,764	150,269	270,033
Norwegian.....	976,516	195,244	1,171,760
Spanish.....	157,527	80,335	237,862
Swedish.....	180,415	83,586	264,001
Total.....	12,037,548	2,186,704	14,224,252

These losses were more than made good by new construction so that the net effect of the war was as follows:

**STEAM TONNAGE OF 100 TONS AND UPWARDS OWNED BY
THE PRINCIPAL MARITIME COUNTRIES BEFORE
AND AFTER THE WORLD WAR**

Country	June, 1914	June, 1919	Difference Between 1914 and 1919	
	Tons Gross	Tons Gross	Tonnage	Per- centage
United Kingdom....	18,892,000	16,345,000	-2,547,000	-13.5
British Dominions...	1,632,000	1,863,000	+231,000	+14.1
United States:				
Seagoing	2,027,000	9,773,000	+7,746,000	+382.1
Great Lakes.....	2,260,000	2,160,000	-100,000	-4.4
Austria-Hungary....	1,052,000	713,000	-339,000	-32.2
Denmark.....	770,000	631,000	-139,000	-18.1
France.....	1,922,000	1,962,000	+40,000	+2.1
Germany.....	5,135,000	3,247,000	-1,888,000	-36.8
Greece.....	821,000	291,000	-530,000	-64.6
Holland.....	1,472,000	1,574,000	+102,000	+6.9
Italy.....	1,430,000	1,238,000	-192,000	-13.4
Japan.....	1,708,000	2,325,000	+617,000	+36.1
Norway.....	1,957,000	1,597,000	-360,000	-18.4
Spain.....	884,000	709,000	-175,000	-19.8
Sweden.....	1,015,000	917,000	-98,000	-9.7
Other Countries....	2,427,000	2,552,000	+125,000	+5.2
Total Steam Tonnage	45,404,000	47,897,000	+2,493,000	+5.5

This table, however, does not take into consideration the normal growth which the world's merchant tonnage would have enjoyed if no war had interfered. During the calendar years 1919 and 1920 the world's shipyards launched approximately 7,150,000 and 5,850,000 gross tons respectively. On December 31, 1920, no less than 7,861,363 gross tons were building throughout the world.

Shipping Board finances.—To return now to our discussion of the work of the Shipping Board, the question of cost ought to be considered. The total expenditure required

for the completion of the modified Shipping Board program will be approximately \$3,000,000,000. On June 30, 1919, the following official estimate was given out:

Ships.....	\$3,087,418,087
Plants.....	168,413,797
Administration.....	45,000,000
Housing.....	68,486,700
Drydocks.....	20,294,394
Transportation.....	10,123,309

Since then, however, additional reductions have been made which will probably keep the total below the figure given above.

There were three types of contracts for ship construction awarded by the Emergency Fleet Corporation:

- (a) Lump sum;
- (b) Cost plus fee (fixed or sliding);
- (c) Agency.

The Corporation favored the lump sum form, but many contractors were unwilling to work under this form because of the uncertainties due to war conditions. Nevertheless over 80 per cent of the contracts were of the lump sum type.

Agency yards.—The agency form was used primarily in connection with the so-called fabricated shipyards at Newark, N. J. (Submarine Boat Corporation); Bristol, Penn. (Merchant Shipbuilding Corporation, controlled by the Harriman interests); Hog Island, Penn. (American International Shipbuilding Corporation, a subsidiary of the American International Corporation, which in turn is affiliated with the National City Bank of New York); and at Wilmington, N. C. Under this type of contract the agent received a fixed fee based upon an estimated cost, while the Emergency Fleet Corporation bore the expense of building the yard, constructing the ships, etc. The agents received no fee for yard construction. Any saving in the cost of

ship construction below the estimate was to be divided equally among the agent, the owner and the employees. Any increase in the cost was deducted from the agent's normal fee until a minimum was reached.¹

Hog Island; history and record.—Of the fabricated yards, Hog Island, as the world's largest shipyard, having 50 shipways, 7 outfitting piers, and 250 buildings, covering a total area of almost 850 acres, attracted world-wide attention. The yard itself cost approximately \$66,000,000, which was far in excess of the original estimate. On October 8, 1919, the Shipping Board Information Bureau gave out the following statement:

"With the delivery of the *Nobles*, a 7800 d.w.t. freighter, the Hog Island Shipyard completed delivery of its first fifty vessels to the United States Shipping Board. The total tonnage delivered is 391,250 d.w.t. This is the world's record for shipbuilding in a single yard.

"The total tonnage delivered by the American International Shipbuilding Corporation (Hog Island Shipyard) is 105,705 d.w.t. greater than the deadweight tonnage of seagoing vessels delivered from American yards for the year 1916 which was the record pre-war year in ship production. In that year (1916) there were built in all yards in the United States 38 seagoing vessels of 1500 d.w.t. upwards, totaling 285,555 d.w.t."

During its entire career, Hog Island turned out a total of 122 steel ships, the last being delivered in January 1921.

At the time of this writing, the future of this great enterprise hangs in the balance. The yard was planned and built for emergency shipbuilding, and the conditions which warranted its construction no longer exist to-day. As a shipyard the enterprise is too unwieldy to compete with smaller concerns better adapted to normal conditions. There is a possibility of turning the wet basins into a commercial

¹ See *Third Annual Report of U. S. Shipping Board*.

terminal for ocean-going vessels and of using some of the buildings for transit sheds, ware houses, etc.

Expansion of shipbuilding facilities.—All told, the Emergency Fleet Corporation had to increase the available shipyard facilities of the country from 61 yards with 215 ways, to 341 yards with 1,284 ways (including those yards which were under construction at the time of the armistice and subsequently dissolved). This is a fivefold increase between the declaration of war and the signing of the armistice.

But the building of ships, either requisitioned during construction or contracted for, was but one—though naturally the most important one—of the ways by which the Shipping Board acquired its large fleet. The other additions came from the following sources:

- (1) Seized German and Austrian ships. These comprised a gross tonnage of approximately 600,000 tons.
- (2) Commandeered Dutch and other neutral vessels. The Dutch ships alone represented a total of over 350,000 gross tons.
- (3) Foreign ships chartered to the United States Shipping Board or under agreement with it. The total of these was 161 ships of almost 700,000 gross tons.
- (4) Ships built for the Board in Japanese and Chinese yards. These numbered 49 vessels of 415,000 D. W. tons.

The Shipping Board Fleet.—When the armistice ended the war emergency, the Shipping Board control over many vessels was gradually released. But on June 5, 1920, the Board still owned and controlled the following fleet:

WORK OF THE U. S. SHIPPING BOARD

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**VESSELS OWNED AND CONTROLLED BY THE UNITED STATES SHIPPING BOARD
COMPILED AS OF JUNE 5th, 1920**

Class	Total		Cargo and Passenger	Tankers	Refrigerators	Trans- ports
	Cargo	Passenger				
Contract Steel Vessels.	956	6,429,069	802	5,913,788	46	438,342
Requisition Steel Ves- sels.	205	1,334,609	182	1,161,359	14	110,838
Wood and Composite Vessels	271	887,854	271	887,854	7	44,513
Concrete Vessels	4	13,500	4	13,500	2	17,700
Purchased Vessels.	24	157,921	24	157,921		
Seized German and Austrian Vessels.	31	291,821	5	28,824	26	262,997
Chartered from Peru (Callao-Eten)	2	18,700	2	18,700		
Total	1,493	9,243,464	1,388	8,273,246	28	281,687
			59	549,280	15	112,620
					3	28,621

Problems of operation.—When we now turn from the problems of construction to those of operation, the first question naturally concerns the agency operating the ships. There were three main methods by which the Shipping Board tonnage was operated:

- (1) Directly by the Emergency Fleet Corporation;
- (2) By assignment to Managers;
- (3) By assignment to Operators.

The first way was avoided wherever possible. Almost exclusively vessels used by the Emergency Fleet Corporation for its own purposes, such as those engaged in transporting lumber to build ships and shipyards, were operated directly by the Board. But, in order to develop organizations capable of handling the vast business of the great American Merchant Marine, the Shipping Board has encouraged private enterprise and has assigned the new tonnage to those who are in a position properly to handle the vessels and in whom the Shipping Board has confidence. Whenever possible this method has been preferred to that of building new governmental agencies to do the work.

Types of operating agreements.—The general features of the two types of assignment contracts were described in the *Second Annual Report of the Shipping Board* as follows:¹

"Assignments to managers, whose duties cover the engaging of officers and crew, purchase of consumable stores, deck and engine-room supplies, and general attention to the steamer from a husband's or shipowner's point of view.

"Assignments to operators, whose duties are to attend to the loading and discharging of the cargo, paying all port charges, giving attention to the proper stowage of the cargo.

¹ Pages 62, 63. See Appendices E and F.

lection of freight, demurrage, etc., and, in general terms, operate the steamer in the same manner as if she were for time charter to them.

'Both managers and operators are only acting as agents for the Division of Operations of the Emergency Fleet Corporation.

'All assignments are passed upon individually by the Board in each case and entered on its minutes. These assignments find legal form in agreements made by the Division of Operations of the Emergency Fleet Corporation with managers and operators, under which managers are paid a fixed monthly fee and operators a percentage of gross freight or a lump sum based on trade and cargo carried and services rendered.

'Operators are at all times subject to the orders of the Shipping Board as to voyages, cargoes, priorities of cargoes, porters, rates of freight, and other charges, and all matters arising out of the use of the vessel.

'Managers and operators account to the Comptroller of the Division of Operations of the Emergency Fleet Corporation for all moneys expended and collected in connection with the operation of the vessel. The Shipping Board may terminate the assignment of the vessels on 24 hours' notice and the operator may terminate the agreement on 30 days' notice."

By April, 1920, about 160 such agents operated more than 100 steamers of more than four million D. W. tons on 181 regular routes and about an equal amount of tonnage in cargo tramping and miscellaneous services.¹

Under the original agreements, the managing and operating agents had relatively little freedom of action. War

Speech by Mr. W. F. Taylor, Assistant Director, Division of Operations, United States Shipping Board, delivered before United States Chamber of Commerce on April 29, 1920.

emergency requires centralized control. As the world slowly returns to normal conditions, such centralization becomes superfluous. Several changes in the agreements just referred to have reflected this transition. The reins were held more and more loosely, until to-day the agents have almost as much freedom of action as if they were owners. We let one of the executives of the Division of Operations explain this latest change:¹

Recent changes.—“The Board, recognizing and concurring in the almost unanimous sentiment of the country in favor of ultimate private ownership and operation, this being also reflected by the trend of pending legislation, recently adopted a fundamental change in its relation with the shipping concerns acting as agents or operators of Shipping Board steamers. This was done by means of a new managing agency agreement, whereby the shipping concern, acting as managing agent, undertakes to operate the vessel to all intents and purposes as owner, receiving as compensation a portion of the net earnings obtained. This is expected not only to prove an added incentive for efficient operation, but even more important, it duplicates as nearly as possible the condition of private ownership and operation, increasing the agent's initiative, resourcefulness and confidence in meeting the situations which would confront him as an owner. Added authority is given to the agent under this plan commensurate with his added responsibility, and he is permitted to use his own discretion in the matter of selecting employment for the vessel and making rates, terms and conditions for cargo. This is all, of course, subject to the general supervision of the Board, whose final control is exercised in all matters affecting the public inter-

¹ *Ibidem.*

ests or convenience, or where necessary in the development of our foreign commerce and trade routes.

"While this plan affords a flexible and commercial service for the benefit of our exporters using Shipping Board steamers, it is obviously necessary to prevent destructive competition between the government-owned vessels through their several managing agents. This is accomplished and the stability of rates required in the best interests of the shippers is maintained by means of conferences between our agents in each of the various trades operating out of the North Atlantic, South Atlantic, Gulf and Pacific districts." The latest move is to adopt a bare boat charter as the prevailing method of Shipping Board tonnage operation.

The Shipping Control Committee.—As the centralized control over shipping is being relaxed, the work of the Division of Operations becomes less complex. At the height of the war emergency this body exercised authority over a larger aggregate of tonnage than had ever before been assembled under one control. This enormous power was wielded by the Shipping Control Committee, consisting of three men, one of whom represented the British Ministry of Shipping. This Committee was created in conjunction with the War Department.

Briefly, the powers delegated to this Committee may be grouped under two main heads:

- (1) As the agent of the Shipping Board, it allocated the vessels owned and controlled by the Board to cargoes and trade routes, so as to use the available tonnage to the maximum efficiency in the most essential trades.
- (2) As the agent of the War Department, the Committee had entire charge of the operation of the

fleet of steamers engaged in transporting military material to the American Army abroad.

The greater part of the work was carried on by the Division of Trades and Allocations. It involved the distribution of an enormous tonnage in such a way as to take proper care of such important requirements as nitrates, manganese ore, sugar, hemp, wool, hides, tanning extracts, etc. This control extended over the entire globe and its significance is self-evident. A special Division of Dispatch had to report on the stay in port of each vessel, account for delays, assist operators and owners in securing bunkers, clearance, crews, etc.

The Chartering Committee.—On September 6, 1917, the Shipping Board resolved that no vessel should be chartered to an American or neutral without the approval of the Board, and on September 29, 1917, a Chartering Committee of three was appointed to administer that control.

Several main objects were kept in mind:

- (1) To induce neutral tonnage to accept its fair share of transatlantic trade;
- (2) To effect a considerable reduction in the high charter rates then prevailing;
- (3) To secure tonnage for the most essential trades and commodities.

The Committee had the authority to approve, disapprove or return for revision all charters not under the direct control of the Shipping Board. After April 18, 1918, berth rates also were fixed by the Board.

During its existence of about one and one-half years the Committee passed upon over 19,000 charters,¹ besides cov-

¹ From letter of Mr. Welding Ring, Chairman, to the author.

ase amount of information and particulars as to regu-

The duties of the Chartering Committee were prin-
to see that all charters conformed strictly to the
decided upon by the Shipping Board as to voyages
(in cases these voyages were not permitted in the
ne), and also to determine the necessity for tonnage
ous directions. Added to this there was the duty of
that the charters strictly complied with the rates of
adopted by the Shipping Board. The Chartering
ttee was in close touch and working in harmony
e British Board of the same nature, so that the con-
shipping all over the world was in the hands of the
and the United States Governments because they
led bunkers and supplies for steamers.

Research work of the Division of Planning and Sta-
—Another exceedingly important Division which
osely though indirectly linked up with the operation
large fleet controlled by the Board was the Division
ining and Statistics. In a way, this division may be
the brain of the organization. To it was committed
entific guidance in the conservation and maximum
ion of tonnage. Its acivities followed two main lines:
that of commodities and trades; and second, that of
and their employment. We quote from the *Second*
*l Report of the Shipping Board:*¹ “Under the first
g (the study of commodities and trade) comes the
gation of all factors affecting the import program,
s uses of commodities, possible substitutes, stocks on
essential requirements of Government and commer-
dies, countries and ports of origin, and shipping re-
for import. On the basis of these studies lists are
ed of imports to be prohibited or restricted. It is

often necessary, because of the shortage of shipping in certain areas, to recommend priorities among essential imports from given countries or ports; to make studies of the trade of entire regions with a view to eliminating cross-hauls, efficiently combining cargoes and defining standard shipping routes." It appears from the foregoing, that, while the immediate purpose of all these studies was to aid in the solution of emergency problems, much of this work is of lasting value and represents an important contribution to the science of Commercial Geography, Traffic Geography, Industrial Geography, etc. We quote again from the same source:

"The statistics compiled on ships and their movements cover a wide variety of facts. The division has on file special information derived from the sources concerning the number and types of vessels, their age, draft, size, cargo capacity, speed, motive power, material of construction, number of decks, holds, hatches, fuel consumption, etc. Records are kept of the daily movements of ships in all parts of the world, of the dates and ports of entry and departure, and the tonnage employed in the different trade regions. Charts and diagrams are prepared to show the assignments of vessels to given trades, the length of voyages and stays in port, the performance of vessels engaged in carrying specified commodities, etc.

"Directly connected with this work on ships are many special studies on such subjects as the control of vessels, chartering and subchartering, losses and acquisitions of merchant ships, the efficiency of vessels of different sizes, the movements of ships and cargoes by ports, bunkerage and stowage, repairs and underloading, as well as studies on the suitability of American vessels and foreign vessels under American control for transfer from trade to Army use and from one trade to another.

ie work on commodities and on ships heads up in a
ur monthly survey of the shipping and import situ-
in which a balance is struck between the tonnage re-
l to lift necessary imports from the various trade re-
and the tonnage actually in service in those regions.
tant special studies co-ordinate both phases of the
likewise, as for example, the comprehensive report on
lation of the shipping situation to the proposed military
am, which dealt with available tonnage, limiting fac-
i the shipbuilding program, the types of ships needed,
nprovement of port facilities."

lack of space compels us to confine this story of the work
United States Shipping Board to those performances
lie strictly within the field of shipping. Those who
to have a complete account of all the phases of the
's work are referred to the several *Annual Reports*
Ex-Chairman Edward N. Hurley's interesting vol-
The New Merchant Marine. It must also be remem-
much of the Board's work remains yet to be done.

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CHAPTER XXX

THE MERCHANT MARINE ACT 1920

Significance of Jones Act.—On June 5, 1920, President Wilson signed a bill,¹ the terms of which foreshadow a new era in the development of the American merchant marine. The “Merchant Marine Act, 1920” is the outcome of a number of exhaustive investigations made by the House Committee on Merchant Marine and Fisheries and the Senate Committee on Commerce, covering almost an entire year. To these Congressional Committees, whose respective chairmen are Senator Wesley L. Jones of Washington and Representative William S. Greene of Massachusetts, was entrusted the momentous task of formulating the legislation which will make or unmake the American merchant marine at a moment in the country’s history when the opportunities as well as the responsibilities are greater than ever before. The magnitude of the task appears from the title of the Act which reads: “To provide for the promotion and maintenance of the American merchant marine, to repeal certain emergency legislation, and provide for the disposition, regulation, and use of property acquired thereunder, and for other purposes.”

General characteristics of the Law.—The Merchant Marine Act or the Jones Act, as it is commonly referred to, was not drawn up by “pussyfooters.” Whatever its weaknesses may be, it does not dodge the issues. On the contrary, the Bill has teeth, sharp teeth to hurt if it must be. The framers of the Bill took it for granted “that every patriotic citizen now wishes to see a mer-

¹ See Appendix G.

chant marine under the American flag large enough to carry the major part of our own foreign trade and such part of the world's carrying trade as may be commensurate with our wealth, power and standing among the nations of the world, and that whatever is necessary to bring that about they want to be done."¹ The spirit in which the bill was drawn is shown in the following paragraphs:

"No interests but American interests have been kept in view. We are sure that other nations will look after their citizens and their needs, and if our business is to be cared for, we must do it. Years ago our great commercial rivals said, "To hell with American ships!" That spirit exists to-day. It is expressed in milder terms, but with no less certainty. *Fair Play*, the great shipping organ, of London, said a short time ago:

"Senator Jones and other enunciators of golden periods must clearly understand this, that things being as they are, so far as Great Britain is concerned there can be no question of mutuality of sacrifice. We have always been generous and, in the matter of our interpretation of free trade, fools; but when it has been a question of the survival of the fittest we have invariably done our level best to crush or mold opposition, and, as regards America's new mercantile marine, we shall go on doing it and expect her to do the same by us."

"This is what we must meet. We are going to meet it not in the spirit of destruction, but in the spirit of fair play and with a determination to secure our just portion of the world's carrying trade.

"The nations that have been doing the ocean-carrying trade during the last 50 years are not going to give it up without fierce struggle. They are not willing for us to do a fair part. They know the business. They have the experience and the business facilities and connections throughout the world that give them a great advantage. Governmental aid and power will be co-ordinated with private

¹ Report submitted by Senator Jones, Calendar No. 520, Senate Report No. 573, p. 1.

energy and initiative to maintain their position, and must be met in the same way.

"Nations are not free that depend upon foreign fleets to carry their products and bring to them their supplies. The peace of the world is not secure so long as one nation wholly dominates the ocean trade. We do not seek to drive other nations from the sea. We do not seek to dominate ocean trade. But we do seek to do a just and proper part of it, and especially of our own. If we can not attain this end now we never can do it. No halting, hesitating, doubting policy will succeed. We must take risks. We must encourage our capital and energy to go into this contest and assure them that we are behind them to build up and sustain rather than tear down. With this assurance no one can doubt our success."

Current opinion on new shipping law.—Any law conceived in a spirit such as this is bound to have warm friends as well as bitter enemies, both at home and abroad. Two quotations picked at random from current publications reveal the wide discrepancy which marks domestic opinion on the new shipping law:

The *New York Journal of Commerce* said: The legislation is against the spirit of the times, opposed to all sound, economic doctrine, and essentially inequitable. It must, therefore, be a failure in the broadest sense of the term. Americans can feel only regret at having to admit the concluding statement of Mr. Jones' demesne in which he says that this "is an American act." It is more nearly modeled upon the lines of Prussian protectionism as exhibited in Germany before the war."

The *New York Sun and Herald* said: "The greatest boon to American shipping in three-quarters of a century is the Jones bill just signed by the President."

But the merchant marine law affects all maritime nations and therefore extends into the field of international politics, and that at a time when the material

world is in chaos and mankind in a state of nervous excitability. It was not surprising therefore to find the State Department entering vigorous protests against those parts of the new law which refer to matters concerning the interests of the United States and those of other countries. These interests of the United States and those of other countries are apt to clash as a result of the new situation created by the war and reinforced by the provisions of the Jones Bill. In our discussion of the Law, we will point out those features which are particularly likely to cause resentment or increase friction in our international relations with foreign nations. Great Britain and Japan, two nations whose interests are more deeply affected by America's bid for a just share of the sea-borne trade of the world, were the first to indicate their disapproval. Mr. Lloyd George promptly declared in Parliament his intention of protesting against the American Shipping Law, and from Tokio, the cable announces that Japan likewise will protest against the Jones Bill, especially with regard to its relation to the shipping of the Philippines. The protest, according to the *Hochi Shimpo*, Japanese newspaper, will be made on the ground that the measure is a discriminatory violation of the Japan-American commercial treaty, and represents a blow to Japanese shipping.¹

Detailed provisions of the Act, Section 1 and 2.—We shall now take up the 39 sections of the new law, state the contents of each section, and wherever necessary the meaning and portent of the provisions of the Act.

Section 1 announces the determination of Congress "to do whatever may be necessary to develop a

¹ See *Nautical Gazette*, June 12, 1920, p. 883.

urage the maintenance of a merchant marine of the best equipped and most suitable types of vessels sufficient to carry the greater portion of the country's commerce and serve as a naval or military auxiliary in time of war or national emergency, ultimately to be owned and operated privately by citizens of the United States." Section 2 puts an end to Government shipbuilding, permitting only the completion of the building now under way. It contains several amendments to various Emergency Shipping Acts.

Section 3 creates new Shipping Board.—Section 3 represents a far-reaching modification of Section 3 of "The Shipping Act, 1916" which created the original Shipping Board. The number of Commissioners is increased from three to seven; their salary is raised from \$7,500 to \$12,000. The number was enlarged so as to render it possible that every section of the country be represented on the Board in a way which will do justice to the maritime interest of the different parts of the United States. The distribution is as follows:

Pacific Ocean States.....	2
Atlantic Ocean States.....	2
Gulf of Mexico States.....	1
Great Lakes States.....	1
Interior States	1
<hr/>	
Total for all States.....	7

Not more than four members of the Board may be of the same political faith.

Section 4 turns the vessels and other property acquired through the President, over to the Shipping Board. This refers primarily to the ex-enemy vessels, but vessels in military or naval service are excepted.

The new sales policy.—Section 5 gives the Shipping Board power to sell at its own discretion, subject, however, to certain conditions, the ships to which the Board holds title. In this portion of the Act, the Senate made very extensive and important changes of the Greene Bill, which was the House measure underlying the Jones Bill. It is apparent from Mr. Greene's Report,¹ that he was largely influenced by the fear of a marked drop in freight and tonnage values to be expected in the near future. He was willing to have the Government shoulder a very considerable loss from the sale of the ships. The Senate, on the other hand, emphasized the fact that the ships are the people's property and that therefore they should not be sold at bargain prices merely to get rid of them and into private hands as quickly as possible. Besides, the lengthy hearing held by the Senate Committee on Commerce forcefully brought out the fact that, even if the Government were willing to sell the approximately 13 million D. W. tons of ships at a considerable loss, the sale of such an enormous amount of tonnage could hardly be financed, unless it were to be spread over a fairly long period. In general, the Shipping Board is instructed to let itself be guided by the same principles which a prudent and solvent business man would consider under like circumstances. The Senate had fixed a minimum price by the provision: "no sale shall be made at a less price than the cost at the time of making such sale of constructing vessels of similar types in private yards in the United States, after deducting the depreciation charge against the vessels sold and generally allowed in shipping operations." But the House members insisted upon modification and an

¹House Report No. 443, p. 2.

th-hour change in the Act stipulates that the Board shall offer Government-owned vessels for a competitive basis. The price at which the Board's vessels will be sold to private owners largely determine the ability of American carriers to compete with their foreign rivals, whose ship values have to a considerable extent been written off. Their tonnage in most cases consist partly of older vessels wholly written off and partly of newer vessels. On an average the foreign fleets therefore represent a fairly low book value when compared with that of some American companies all of whose ships are new, i.e., built since the war.

Criticism of this policy.—Some people find fault with the section because it gives the Shipping Board too much free rein. They read between the lines that what the government really wants is to stay in the shipping business for an indefinite period. But those who take the time and trouble to read thoroughly the volume of documents before the above-mentioned Congressional Committee can hardly help being impressed with the honesty and competence of the particular lawmakers responsible for this Act, and destructive criticism of this important piece of legislation such as is found in some papers,¹ both unjust and impolitic. To be sure, much will depend on the caliber of the men who will make up the Board.

Sale of shipping Board vessels to aliens made very difficult.—Section 6 permits the Board to sell Government-owned vessels to aliens if a sale cannot be made to Americans. A two-thirds affirmative vote of five of the seven members of the Board is required in passing upon each case. Additional

¹e.g., *Export Trade and Exporters' Review*, June 19, 1920,

restrictions contained in provisions which were to limit the sale of ships to aliens to vessels below a certain size and above a certain age, were stricken out.

Section 7 instructs the Board to establish needed new steamship services by sale or charter of government vessels. Thus most of the ex-enemy vessels were allocated to the recently organized United States Mail Steamship Company, to ply on specific routes. The section furthermore authorizes the Post Office Department to grant mail contracts and to give preference to American ships in doing so.

Nation-wide inquiry into traffic conditions authorized—Section 8 charges the Board to investigate transportation and traffic conditions prevailing in the hinterland of the important ports of the country, suggest improvements and co-operate with the Interstate Commerce Commission in order to remedy congestion and other evils marking the after-war status of our transportation system.

Section 9 stipulates that marine insurance must be carried on ships sold by the Board on deferred payments. The Government naturally wants to protect its equity.

Section 10 authorizes the Shipping Board to establish its own insurance fund to cover ships or other property of the Board.

Aid to shipbuilding.—Section 11 is a provision under which it is hoped new and up-to-date ships will be built to round up the war-constructed fleet. A revolving fund of \$25,000,000 a year may be set aside out of revenues from sales and operation for a period of five years to lend to American citizens who desire to build ships, the loan not to exceed two-thirds of the value of such ship or ships.

Section 12 permits the Shipping Board to recondition the ex-enemy vessels. However, recent events show that the Board intends to make little use of this permission. When the Shipping Board proposed to recondition the *ex-Vaterland*, now the *Leviathan*, the lowest estimate for this undertaking of unparalleled proportions was in excess of \$9,000,000 and 500 days. The Board therefore decided to dispose of the vessel "as is" to private interests, leaving to the buyer the task of reconditioning. A similar policy was pursued regarding most of the ex-German ships. When they were chartered to the United States Mail Steamship Company, the arrangement was that the contracting company bear the cost of reconditioning.

Section 13 authorized the sale of other property owned by the Board.

Section 14 provides for the transfer of excess revenues of the Board to the Treasury.

Section 15 exempts the War Department from the payment of charter money on Shipping Board vessels used during the war with Germany.

Section 16 terminates the authorization given the Board during the war for constructing houses, buildings, etc.

Section 17 transfers the control over docks, piers, warehouses, wharves and terminal equipment and facilities acquired during the war from the War Department and other agencies of the Government to the Shipping Board.

Section 18 forbids the sale to aliens of any American vessel, whether Government or privately owned, without the consent of the Board. (It will be noted that Section 6, which also refers to the sale of vessels to aliens refers to Shipping Board vessels only).

The Board may issue "orders in Council."—Section 19 authorizes the Board to issue rules and regulations affecting shipping. These resemble somewhat the notorious British "orders in council." The aim is to protect American ships against unreasonable foreign competition. Some legislative experts criticize this Section because it clothes the Shipping Board with lawmaking powers.

Against "deferred rebates" and "fighting ships."—Section 20 denies entry to American ports to any vessel which grants "deferred rebates," or to a line which make use of "fighting ships," or to a line which retaliates against any shipper. This provision is a necessary corollary to the Section of "The Shipping Act, 1916" which forbids American ships the use of such weapons. No country can afford to disarm its own nationals without assuming the task of protecting them against outside aggression. This Section was modified by an insertion which lessens the rigidity of the law and assures a reasonable enforcement. Relentless enforcement of this provision would, under the present circumstances, exclude most of the European vessels and deprive the commerce of this country of much of the tonnage which serves it to-day. The question is simply whether European ships can more readily go without American cargoes or American commerce go without European ships. As we have seen in a preceding chapter little has been done as yet to enforce this part of the law.

Extension of coastwise laws.—Section 21 extends coastwise laws to insular possessions and territories of the United States on and after February 1, 1922. This portion of the law runs directly counter to the interests of Canada and Japan. The former country is bound to lose a profitable business now carried on between Alaska

and the United States. The latter would lose the right of carrying goods between this country and the Philippines.

Section 22 closes coastwise trade to foreign ships. This provision repeals an Act which was approved October 6, 1917 and which permitted vessels of foreign registry and foreign-built vessels admitted to American registry under the Act of August 18, 1914, to engage in the coastwise trade during the World War and for a period of 120 days thereafter.

Tax exemption for American shipowners.—Section 23 exempts American steamship companies from the excess profit tax for a period of ten years. But it is stipulated that the shipping companies invest, either in Government owned ships or in new construction in American shipyards, a sum equivalent to the amount they would otherwise have to pay into the United States Treasury. This condition should hardly prove a hardship to any company which desires to stay in the shipping business for good, and does not merely venture upon a speculative excursion into the shipping game. This tax exemption should help to offset certain handicaps from which American steamship companies would otherwise have to suffer. In this connection it should be remembered that both England and France are taxing their shipping concerns rather severely.

American mail for American ships.—Section 24 states that the mails shall be carried on American ships only whenever practicable. The Postmaster General is authorized to make contracts to that end. Senator Jones expressed himself as follows on this particular point: "We are now spending several millions of dollars every year for the transportation of United States mail and about

two-thirds of this money is being paid to foreign ships. This is nothing more nor less than a direct subsidy to them and should cease." Of course, such a policy was not possible until this country possessed a sufficient amount of tonnage.

American Bureau of Shipping recognized.—Section 25 makes the American Bureau of Shipping the official classification agency for American vessels. The framers of the law hope to develop and build up an American Bureau which will be an American Lloyds and eventually have the standing in the shipping world which the great English agency enjoys to-day. All Shipping Board vessels are classified by the Bureau of Shipping.

Section 26 permits American freight steamers to carry not in excess of sixteen passengers.

Section 27 states that merchandise shipped between points in the United States must be transported only on American vessels, within certain limitations.

Preferential railroad rates for goods carried in American bottoms.—Section 28 permits preference or lower inland rail rates on goods imported or exported in American ships. Previous to the passage of this law, American railroads were permitted to grant lower export and import rates regardless of the nationality of the vessels in which the traffic moved. Under the new law, this preference rate is confined to goods moved in American bottoms. If, however, no American ships are available this clause does not apply. In this case, the Shipping Board certifies to the Interstate Commerce Commission that sufficient American tonnage is not available properly to handle the commerce of the country. The Interstate Commerce Commission may then temporarily suspend the operation of the provisions of this Section. Admiral

Benson, Chairman of the Shipping Board, acting on resolution of the Board, has repeatedly certified to the Interstate Commerce Commission the desirability of suspending for a period of ninety days the provisions of this Section.

This provision attacked and defended.—This Section, 28, is one of the stumbling-blocks of the Jones Bill. It arouses the ire of foreign shipping interests, who threaten to retaliate by diverting business from American ports. Special efforts are being made at present to divert Pacific Coast traffic from American ports to Canadian ports, particularly Vancouver. It is instructive to read what Admiral Benson has to say about these attempts on the part of foreign steamship companies.¹

Should foreign carriers attempt to divert trade from the American Pacific Coast ports, Admiral Benson explained that Section 28 could be made operative. "Then merchandise *via* Vancouver would neither be entitled to the rates between United States points and Vancouver in either direction on merchandise locally moved, nor to the export rate now applicable *via* Vancouver.

"There would be required on merchandise moving for export a collection by rail lines within the United States of the local freight charges, such as would apply on a 'like kind of property for the same distance in the same direction and over the same route, in connection with commerce wholly within the United States.' This would be the local charge from the point of origin to the border port, which, in most instances, would be 'class' rates. This would make a charge *via* such routing to Vancouver much higher than the domestic rate from such point of origin to any Pacific Coast port within the United States. Movement through Vancouver

¹ Statement of Admiral Benson, released July 2, 1920.

would be made impracticable unless in connection with American vessels operating from that port.

"Any foreign carrier making such transfer of operation would thus find itself at still further disadvantage in competition with the preferential rate allowed American vessels than if they continued their operations at the American ports."

"Foreign threats and propaganda will fail," said the Admiral. "Those who use such arguments on behalf of foreign interests overlook the fact that the Transportation Act of 1920 has given to the Interstate Commerce Commission authority in 'emergency' to direct traffic or establish an embargo against movements of freights. It also has authority to establish minimum rates on any commodity moving subject to the Interstate Commerce Act within the United States. The Commission is aware of the necessity for preventing the distorting of traffic upon the railroads of the United States such as would be accomplished by an effort by foreign carriers to divert the export and import traffic now moving between Pacific Coast ports of the United States and the Orient, either to British Columbia or to ports of the Atlantic.

"The movement of a certain share of the Oriental business over Western American rail lines is necessary to prevent increased costs of the transportation of food stuffs between the West and the centers of population moving domestically over those rail lines. Any effort on the part of foreign carriers to accomplish the diversion of such business would be undoubtedly considered an 'emergency' under which the Interstate Commerce Commission would act through absolute embargo, if necessary, to prevent such effort from being successful."

These powers seem ample enough, but the Admiral adds

hat if for some reason it is found that even they do not suffice, Congress, firmly determined to put the American merchant marine on its feet, will supply whatever additional powers are needed to thwart hostile attacks by foreign interests.

"While this measure was under discussion in Congress, the fear was expressed that foreign countries would retaliate with like measures. But it must be remembered that the average rail haul in the United States for export or import from either coast is so much greater than the average rail haul in any other country as to leave to the United States under like discrimination an advantage of approximately 80 per cent.'"¹

Encouragement for American marine insurance companies.—Section 29 provides a law for the creation and encouragement of American marine insurance companies. Under certain conditions, marine insurance associations and companies are relieved from the restrictions of the Sherman and Clayton anti-trust laws. Business was not slow to take advantage of this permissive legislation; for, by the end of June, a marine insurance pool of national scope had been organized. It is expected that, aided by the new regulations, American firms will soon underwrite a great deal more of the marine risks involved in American shipping than the 25 to 30 per cent. carried in former times.

Ship mortgage reform.—Section 30 standardizes and protects the equity involved in ship mortgages. In the past banks have been somewhat wary of making loans secured by ship mortgages. The mortgage laws, as applied to vessels, were such that financiers did not think it safe to advance large sums such as are required under the existing

¹ Memorandum submitted to Senator Jones by General Counsel of Shipping Board.

high tonnage prices. Previously, other marine liens have not been subordinate to a first mortgage. The Shipping Board proposed radical changes in the existing laws, but owing to the opposition of some ship repair interests and shipbuilders the House and Senate conferees discarded the mortgage provisions suggested by the Shipping Board. However, the laws were substantially improved, and banks will show greater readiness to assist in the financing of steamship enterprises.

Seamen's law upheld.—Section 31 is largely a corroboration of certain provisions of the "Seamen's Act." It grants to American seamen the right to demand and receive one-half the wages due them at any port where an American ship may stop; foreign seamen on foreign ships are granted the same privilege in ports of the United States.

Section 32 forbids that any seaman may receive a wage in advance of the time it has been actually earned.

Section 33 permits the recovery of damages by seamen for personal injury.

The question of tariff discrimination.—Section 34 authorizes the repeal of treaties preventing the imposition of discriminating duties on goods imported in American bottoms. This section was passed over the protests of the State Department. But the State Department is not alone in its adverse stand toward this provision of the Bill. It is feared that this legislation promises to embroil us with the other leading maritime powers and may induce them to act in concert against us. We are warned against arousing the antagonism of our rivals when we need their good will.

This question of the adoption of discriminatory duties must be discussed from three angles. We must consider its effectiveness, the wisdom of this system under present circumstances, and finally its legality or constitutionality.

Historical aspects.—That the levying of discriminating duties on imports is an effective means of building up a merchant marine is amply proved by the history of most maritime nations, and by none better than that of the two nations who to-day head the list—Great Britain and the United States. England, until 1854, when her fleet had been developed to magnificent proportions, granted her own shipping manifold advantages. Foreign vessels were not only excluded from the coasting trade but from inter-imperial trades as well. Navigation acts and other mercantilist legislation laid the foundation of British maritime supremacy, and the props were removed only because the giant structure was strong enough to stand without them.

Our own experience in this respect is summed up in a recent Report¹ as follows:

“After the Revolutionary War the languishing foreign trade and foreign shipping of America finally led the Confederated States into the Constitutional compact. The first action of the Constitutional Congress was to pass the tariff law of July 4, 1789. The fifth section of this Act provided for a discount of 10 per cent of all the duties imposed by the Act on importations in vessels wholly the property of a citizen or citizens of the United States at the time of such importation.

“The Act further provided for a very large discriminating duty in favor of American ships in the importation of tea, and imposed a duty of 12 per cent ad valorem on all importations from China and India in ships other than those of the United States.

“The second Act passed by the Congress imposed dis-

¹ *Report of Special Committee of Shipbuilders* on the subject of legislation to further and maintain an American merchant marine, submitted to a meeting of shipbuilders held at the Pennsylvania Hotel, New York City, on March 23, 1920, pp. 4, 5.

criminating duties on tonnage, whereby American ships were taxed at the rate of six cents a ton. Ships thereafter built in the United States, *belonging wholly or in part to foreign subjects*, were taxed at the rate of thirty cents a ton, and all other ships at the rate of fifty cents a ton. The Act further provided that the American ship when employed in the *fishing and coasting* trade should only pay tonnage once a year, whereas a foreign ship so employed should pay fifty cents per ton for each entry. This amounted to a reservation of the fisheries and the coasting trade to the American ships. It will be observed that this Act gave a discrimination in favor of the American-built ship by *whomsoever owned*.

"The progress of American shipping under the Tariff Act of 1789 was very great. In that year American ships were carrying 17 per cent of imports and 30 per cent of exports, with a total tonnage in the foreign trade of 123,893 tons. *In 1795 American ships were carrying 92 per cent. of the imports, 88 per cent of the exports, with a total tonnage of 529,471 tons.* Between 1796 and 1815 the growth of our shipping was interrupted by the wars between France and Great Britain, our own Barbary wars, and the War of 1812, but it nevertheless rose to 854,000 tons in the foreign trade, with a carriage of 77 per cent of our imports and 71 per cent of our exports."

While we are fully aware of the fact that in history seldom if ever one single cause accounts for a certain outcome, we believe, nevertheless, that the facts just given demonstrate the efficiency of discriminating duties as a means to rehabilitate a national merchant marine.

The wisdom of discrimination.—The next question refers to the wisdom of adopting discriminating laws at this particular time.

nator Jones remarked on this point:¹

"For many years the United States has been prevented from doing what was clearly to its advantage to do in order to build up the merchant marine by restrictions imposed upon it through commercial treaties. There can be no more fortunate time to abrogate these treaties and make new commercial arrangements, if they are deemed desirable, than

"France has already notified us of her desire to abrogate her treaty with us, and we should put ourselves in a position where we can do whatever we deem necessary to promote our commercial or marine welfare. We may not have to go back to the policy of our fathers under which ships were the nation's pride, but we ought to be free to do it if we want to. We have made provision for this by directing the President to give the notice necessary to terminate such treaties."

It is of interest to know how British shipping leaders stand about discriminatory policies in general. While there is a good deal of agitation going on in favor of reserving coastwise trade and inter-imperial trade to ships of the Empire, it is probably true that the majority of practical shipping men are against such protective measures. But it is of value for our own discussion is the reason why these shipping people are against such preferential treatment. The main argument is simply that they enjoy almost as much preferential treatment as big a share of the coastwise trade and of inter-imperial shipping as they could possibly expect to have. British shipping, without artificial aid of any kind, has almost a monopoly of the inter-imperial trade and the coastwise trade of the Empire. Why should one risk the good will of foreign nations and court international censure in order to assure by legislative acts something which Senator Jones' *Report*, op. cit. p. 9.

which one possesses owing to natural conditions and historical development of trade and shipping? It is a sound argument, but cannot be applied to the United States, which is well-nigh in the opposite position from that of the United Kingdom. Nevertheless, we do not quite agree with the radical advocates of wild discrimination. The consciousness of our superior strength in resources and financial superiority should not make us belligerent. If we can develop our merchant marine and yet keep peace with our neighbors so much the better. Under no circumstances, should protective laws make us forget that national efficiency alone counts in the last analysis. The country with the best brains wins in the end.

Legal aspects.—The question of legality of discriminating customs dues came up in connection with the provision contained in the Underwood tariff law which gave the right to charge 5 per cent less on imports carried in American ships, when such a system did not violate any treaties. The Supreme Court held the provision to be unconstitutional. Then, the President was directed to abrogate the treaties which interfered. This he promptly refused to do. Since, however, most of the treaties provide that a year must elapse after the declaration of the intended abrogation, the 5 per cent preference will hardly become actual until 1922.

Section 35 states that powers delegated to the Shipping Board may be exercised through the Emergency Fleet Corporation.

Section 36 provides that if any portion of the law is declared unconstitutional, such declaration is not to abrogate the remainder or any part of the remainder of the Act.

Section 37 defines the meaning of certain terms used in the phrasing of the law.

Section 38 requires that in American corporations operating in the overseas trade, a majority of the stock issued must be owned by American citizens. Coastwise corporation must be 75 per cent owned by American citizens.

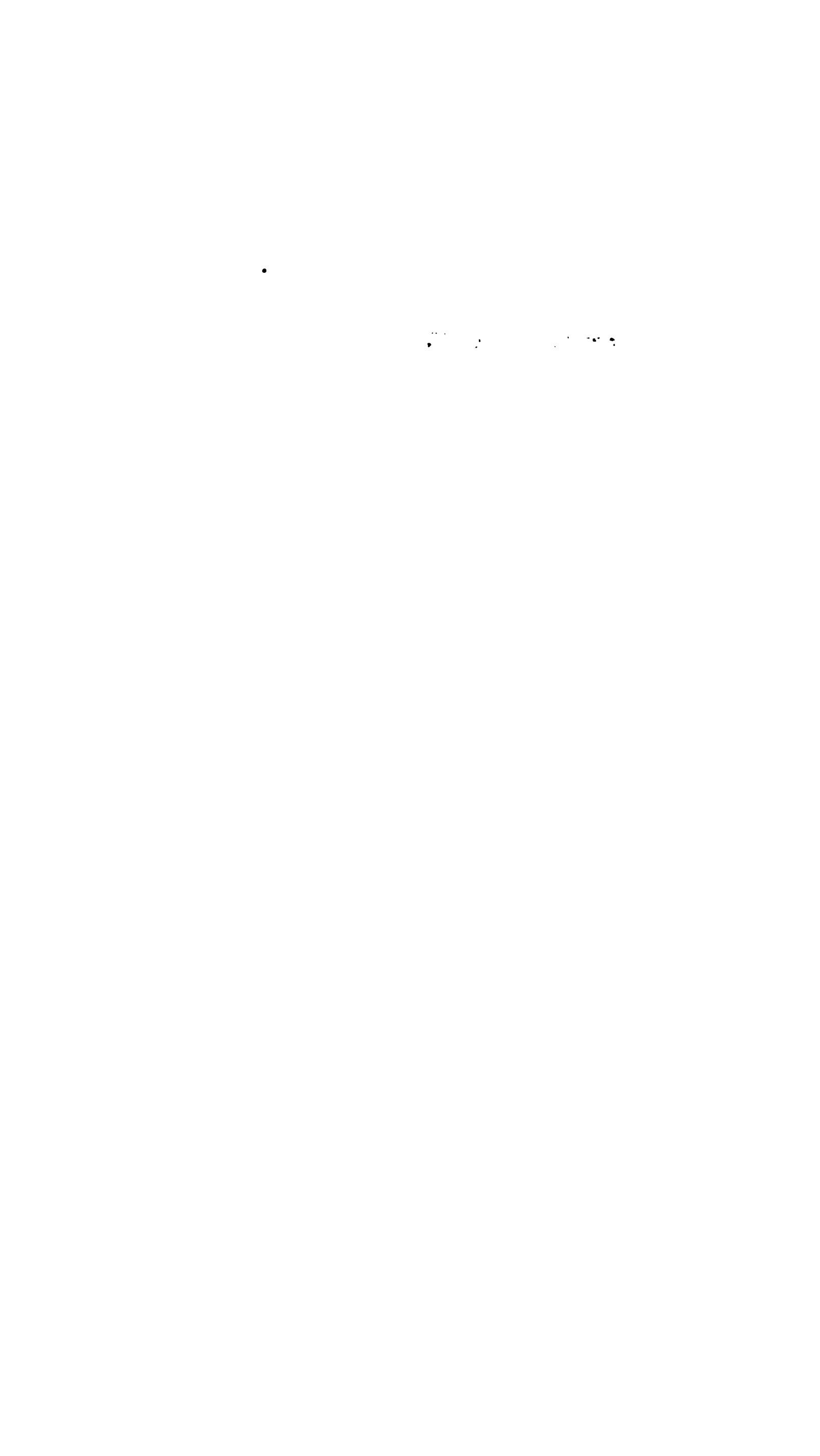
Section 39 stipulates that this law is to be known as the "Merchant Marine Act, 1920."

Conclusion.—In conclusion, we would say that the new law proves beyond question the honest intention of Congress to re-establish the United States as a seafaring nation, and that while the merit of certain provisions will have to be proved by their application, there can be little doubt that the shipping outlook is brightened by this new measure. But let us never lose sight of this: the essential prerequisite necessary for building up an American merchant marine is not ships—they are only instruments, dead matter brought to life by the skill and knowledge of experienced and well-trained men; not laws—though bad laws hinder and good ones help—but rather courage, foresight, confidence, good will and integrity in the hearts of those directly engaged in the shipping business, and patriotic enthusiasm on the part of the people who back them. That is what counts. And the near future will show whether America is willing to put the "Stars and Stripes" back upon the Seven Seas where they were in the glorious days of the past.

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APPENDICES



APPENDIX A AVERAGE BOND

FORM PRESCRIBED BY THE
ASSOCIATION OF AVERAGE ADJUSTERS
OF THE UNITED STATES

WHEREAS, it being represented that the
whereof is, or lately was Master,
having on board a cargo of
in which we are interested as owners, shippers or consignees,
sailed from
on or about the day of 19
bound for
and in the course of her said voyage (*Here give details*)
and that thereby certain losses and expenses were incurred, and
other and further losses and expenses, consequent thereon, may yet
be incurred, and that such losses and expenses may be a charge, by
way of General Average or otherwise, upon the vessel, her freight
and cargo, or either of them.

Now, therefore, we, the Subscribers, owners, shippers, or con-
signees, of such of the cargo of said vessel as we have severally
described and set opposite our respective signatures hereto, in con-
sideration of the premises and of the delivery to us respectively of
such cargo, or so much thereof as may be saved, without retention
pending an adjustment of said losses and expenses, do hereby, for
ourselves, our respective Executors and Administrators, severally
and respectively, but not jointly, nor the one for the other, covenant
and agree to and with

Owners or Agents of the owners of the said vessel and with one
another that the losses and expenses aforesaid, or so much thereof,
as, upon adjustment of the same to be stated by

(Name of firm), Adjusters of Averages,

according to the laws and usages of this port in similar cases, may
be shown to be a charge upon the said cargo, or upon any of the
cargo of said vessel which may be received by us, shall be paid by

us, respectively, according to our several and respective parts or shares thereof, unto the said and/or (name of firm), when such adjustment is completed and due notice given thereof.

Provided, however, that if any of said cargo has been shipped under Bills of Lading containing an agreement that the York-Antwerp Rules shall be the rules of adjustment, such agreement shall not be affected hereby, but in all other respects this Bond shall remain in full force.

And we further promise and agree to furnish said Adjusters upon their request, all information which they may deem necessary to a correct adjustment of this case.

This Bond may be executed in several parts of like tenor and date, the whole of which are to constitute but one Bond, with the same effect as if each of said parts were severally signed by us.

IN WITNESS WHEREOF, we have to these presents respectively set our hands, in the City of this day of one thousand, nine hundred and

Signatures	No. B/L	Marks	Merchandise	Amount of Invoice
.....
.....
.....

APPENDIX B

YORK-ANTWERP RULES OF 1890

RULE I.—JETTISON OF DECK CARGO

No jettison of deck cargo shall be made good as general average.

Every structure not built in with the frame of the vessel shall be considered to be a part of the deck of a vessel.

RULE II.—DAMAGE BY JETTISON AND SACRIFICE FOR THE COMMON SAFETY

Damage done to a ship and cargo, or either of them, by or in consequence of a sacrifice made for the common safety, and by water which goes down a ship's hatches opened, or other opening made for the purpose of making a jettison for the common safety, shall be made good as general average.

RULE III.—EXTINGUISHING FIRE ON SHIPBOARD

Damage done to a ship and cargo, or either of them by water or otherwise, including damage by beaching or scuttling a burning ship, in extinguishing a fire on board the ship, shall be made good as general average; except that no compensation shall be made for damage to such portions of the ship and bulk cargo or to such separate packages of cargo, as have been on fire.

RULE IV.—CUTTING AWAY WRECK

Loss or damage caused by cutting away the wreck or remains of spars, or of other things which have previously been carried away by sea-peril, shall not be made good as general average.

RULE V.—VOLUNTARY STRANDING

When a ship is intentionally run on shore, and the circumstances are such that if that course were not adopted she would inevitably sink, or drive on shore or on rocks, no loss or damage caused to the ship, cargo and freight, or any of them, by such intentional running on shore shall be made good as general average. But in all other cases where a ship is intentionally run on shore for the common safety, the consequent loss or damage shall be allowed as general average.

RULE VI.—CARRYING PRESS OF SAIL.—DAMAGE TO OR LOSS OF SAILS

Damage to or loss of sails and spars, or either of them, caused by forcing a ship off the ground, for the common safety, shall be made good as general average; but where a ship is afloat, no loss or damage caused to the ship, cargo, and freight, or any of them, by carrying a press of sail, shall be made good as general average.

RULE VII.—DAMAGE TO ENGINES IN REFLOATING A SHIP

Damage caused to machinery and boilers of a ship, which is ashore and in a position of peril, in endeavoring to refloat, shall be allowed in general average, when shown to have arisen from an actual intention to float the ship for the common safety at the risk of such damage.

RULE VIII.—EXPENSES OF LIGHTENING A SHIP WHEN ASHORE, AND CONSEQUENT DAMAGE

When a ship is ashore, and, in order to float her, cargo, bunker coals, and ship's stores, or any of them are discharged, the extra cost of lightening, lighter hire, and reshipping (if incurred), and the loss or damage sustained thereby, shall be admitted as general average.

RULE IX.—CARGO, SHIP'S MATERIALS, AND STORES BURNT FOR FUEL

Cargo, ship's materials, and stores, or any of them, necessarily burnt for fuel for the common safety at a time of peril, shall be admitted as general average, when and only when an ample supply of fuel had been provided; but the estimated quantity of coal that would have been consumed, calculated at the price current at the ship's last port of departure at the date of her leaving, shall be charged to the shipowner and credited to the general average.

RULE X.—EXPENSES AT PORT OF REFUGE, ETC.

(a) When a ship shall have entered a port or place of refuge, or shall have returned to her port or place of loading, in consequence of accident, sacrifice, or other extraordinary circumstances, which render that necessary for the common safety, the expenses of entering such port or place shall be admitted as general average; and where she shall have sailed thence her original cargo, or a part of it, the corresponding expenses of leaving such port or place, consequent upon such entry or return, shall likewise be admitted as general expense.

-) The cost of discharging cargo from a ship, whether at a port
ace of loading, call, or refuge, shall be admitted as general aver-
when the discharge was necessary for the common safety or to
le damage to the ship, caused by sacrifice or accident during the
ge, to be repaired, if the repairs were necessary for the safe
ecution of the voyage.
-) Whenever the cost of discharging cargo from a ship is ad-
able as general average, the cost of reloading and storing such
o on board the said ship, together with all storage charges on
cargo, shall likewise be so admitted. But when the ship is
emned or does not proceed on her original voyage, no storage
nses incurred after the date of the ship's condemnation or of the
andonment of the voyage shall be admitted as general average.
-) If a ship under average be in a port or place at which it is
icible to repair her, so as to enable her to carry on the whole
o, and if, in order to save expenses, either she is towed thence
ome other port or place of repair or to her destination, or the
o or a portion of it is trans-shipped by another ship, or otherwise
arded, then the extra cost of such towage, trans-shipment and
arding, or any of them (up to the amount of the extra expense
i) shall be payable by the several parties to the adventure in
ortion to the extraordinary expense saved.

**RULE XI.—WAGES AND MAINTENANCE OF CREW IN PORT OR
REFUGE, ETC.**

hen a ship shall have entered or been detained in any port or
under the circumstances, or for the purpose of the repairs men-
d in rule X, the wages payable to the Master, Officers, and Crew,
her with the cost of maintenance of the same, during the extra
d of detention in such port or place until the ship shall or
ld have been made ready to proceed on her voyage, shall be ad-
ed as general average. But when the ship is condemned or does
proceed on her original voyage, the wages and maintenance of
Master, Officers, and Crew, incurred after the date of the ship's
emnation or of the abandonment of the voyage, shall not be ad-
ed as general average.

RULE XII.—DAMAGE TO CARGO IN DISCHARGING, ETC.

Damage done to or loss of cargo necessarily caused in the act of
larging, storing, reloading, and storing, shall be made good as

general average, when and only when the cost of those measures respectively is admitted as general average.

RULE XIII.—DEDUCTIONS FROM COST OF REPAIRS

In adjusting claims for general average, repairs to be allowed general average shall be subject to the following deductions in respect of "new for old," viz:

In the case of iron or steel ships, from date of original repair to the date of accident,—

Up to 1 Year Old. (A.)

All repairs to be allowed in full except painting or coating of bottom, from which one-third is to be deducted.

Between 1 and 3 Years. (B.)

One-third to be deducted off repairs to and renewal of wood of hull, masts and spars, furniture, upholstery, crockery, metal glassware, also sails, rigging ropes, sheets and hawsers (other than wire and chain), awnings, covers, and painting.

One-sixth to be deducted off wire rigging, wire ropes and hawsers, chain cables and chains, donkey engines, steam winch connections, steam cranes and connections; other repairs in full.

Between 3 and 6 Years. (C.)

Deductions as above under Clause B, except that one-sixth deducted off ironwork of masts and spars, and machinery (inclusive of boilers and their mountings).

Between 6 and 10 Years. (D.)

Deductions as above under Clause C, except that one-third deducted off ironwork, masts and spars, repairs to and renewal of machinery (inclusive of boilers and their mountings), and all anchors, ropes, sheets and rigging.

Between 10 and 15 Years. (E.)

One-third to be deducted off all repairs and renewals, except work of hull and cementing and chain cables, from which one-third to be deducted. Anchors to be allowed in full.

Over 15 Years. (F.)

One-third to be deducted off all repairs and renewals. Anchors to be allowed in full. One-sixth to be deducted off chain cables.

Generally. (G.)

The deductions (except as to provisions and stores, machinery and boilers) to be regulated by the age of the ship, and not the age of the particular part of her to which they apply. No painting bottom to be allowed if the bottom has not been painted within six months previous to the date of accident. No deduction to be made in respect of old material which is repaired without being replaced by new, and provisions and stores which have not been in use.

In the case of wooden or composite ships:—

When a ship is under one year old from date of original register, at the time of accident, no deduction new for old shall be made.

After that period a deduction of one-third shall be made, with the following exceptions:—

Anchors shall be allowed in full. Chain cables shall be subject to a deduction of one-sixth only.

No deduction shall be made in respect of provisions and stores which had not been in use.

Metal sheathing shall be dealt with, by allowing in full the cost of a weight equal to the gross weight of metal sheathing stripped off, minus the proceeds of the old metal. Nails, felt, and labor metaling are subject to a deduction of one-third.

In the case of ships generally:—

In the case of all ships, the expense of straightening bent iron-work, including labor of taking out and replacing it, shall be allowed in full.

Graving dock dues, including expenses of removals, cartages, use of shears, stages, and graving dock materials, shall be allowed in full.

RULE XIV.—TEMPORARY REPAIRS

No deductions "new for old" shall be made from the cost of temporary repairs of damage allowable as general average.

RULE XV.—LOSS OF FREIGHT

Loss of freight arising from damage to or loss of cargo shall be made good as general average either when caused by a general average act or when the damage to or loss of cargo is so made good.

**RULE XVI.—AMOUNT TO BE MADE GOOD FOR CARGO LOST OR
DAMAGED BY SACRIFICE**

The amount to be made good as general average for damage or loss of goods sacrificed shall be the loss which the owner of the

goods has sustained thereby, based on the market values at the date of the arrival of the vessel or at the termination of the adventure.

RULE XVII.—CONTRIBUTORY VALUES

The contribution to a general average shall be made upon the actual values of the property at the termination of the adventure, to which shall be added the amount made good as general average for property sacrificed; deductions being made from the shipowner's freight and passage money at risk of such port charges and crew's wages as would not have been incurred had the ship and cargo been totally lost at the date of the general average act or sacrifice, and have not been allowed as general average; deduction being also made from the value of the property of all charges incurred in respect thereof subsequently to the general average act, except such charges as are allowed in general average.

Passengers' luggage and personal effects not shipped under bill of lading shall not contribute to general average.

RULE XVIII.—ADJUSTMENT

Except as provided in the foregoing rules, the adjustment shall be drawn up in accordance with the law and practice that would have governed the adjustment had the contract of affreightment not contained a clause to pay general average according to these rules.

APPENDIX C

THE BALTIC AND WHITE SEA CONFERENCE UNIFORM TIME-CHARTER 1912

FOR EUROPEAN ETC. TRADE
AS REVISED BERLIN 1912

Code Name:
BALTIME

New York,19...

IT IS THIS DAY MUTUALLY AGREED between *John Doe* Shipping Co., Inc., Owners of the good Steamer called "Chelmsford" of 8,151 Tons gross Register, classed 5,037 Tons net

100 AI in Lloyds of 703 indicated Horse power, carrying about 11,000 Tons dead weight on Board of Trade summer freeboard inclusive of Bunkers, having as per Builder's plan 520,345 cubic-feet grain capacity, exclusive of permanent Bunkers, which contain about 800 Tons, and capable of steaming about ten knots an hour in good weather and smooth water on a consumption of about forty-five tons best Cardiff coal, now en route from Rotterdam for New York, and *Richard Roe & Co.*, of New York, as Charterers.

1. That the said Owners agree to let and the said Charterers agree to hire the said Steamer for the term of (12) Twelve calendar months from the time (the day not to be a Sunday or a legal Holiday) the said Steamer is delivered and placed at the disposal of the Charterers ready to load and after written notice has been given between the hours of 9 a. m. and 6 p. m., or between 9 a. m. and 2 p. m. if on Saturday, at New York in such dock or at such wharf or place immediately available and where she can always safely lie afloat, as Charterers may direct, she being then tight, staunch, strong, and in

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Trade

every way fitted for ordinary cargo service (with her complement of officers and crew); to be employed in lawful trades for the conveyance of lawful, not injurious, inflammable or dangerous merchandise (such as acids, explosives, calcium carbide, ferro silicon, naphtha, petroleum, tar, or any of their products), also no live stock to be shipped, between good and safe ports or places within the following limits: *Safe ports and/or ports in British North America, and/or United States of America, and/or West Indies, and/or Central America, and/or Caribbean Sea, and/or Gulf of Mexico, and/or Mexico, and/or South America, and/or Europe (including Copenhagen, Christiania and Gothenburg), and/or Africa, and/or Asia, and/or Australia, excluding River St. Lawrence, White Sea; and Baltic Sea, out of season; Magdalena River and all unsafe ports; Behring Straits, Arctic Ocean, Iceland, Magellan, coast of Alaska, and Nova Scotia, where she can always safely lie afloat, as Charterers or their Agents shall direct, on the following conditions:*

Owners to provide

2. That the Owners shall provide and pay for all the provisions and wages, and for the insurance of the steamer and for all deck and engine-room stores and maintain her in a thoroughly efficient state in hull and machinery for and during the service.

Owners to provide one winchman per hatch, if further winchmen are required, or if the stevedores will not work with men from the crew at the winches, charterers to provide and pay winchmen from land.

Charterers to provide

3. That the Charterers shall provide and pay for all the coals, fuel, water for boilers, portcharges, pilotages (whether compulsory or not), canal steersmen, boatage, lights, tug-assistance, consulages (except consular shipping and discharging fees of the Captain, officers, engineers, firemen and crew), canal, dock and other dues and charges, (also to pay all dock, harbour and tonnage dues at the port of delivery and redelivery unless incurred through cargo carried before delivery or after redelivery) agencies, commissions, expenses of loading, trim-

ming, stowing, unloading, weighing, tallying and delivery of cargoes, surveys on hatches and protests (if relating to cargo) and all other charges and expenses whatsoever, except those above stated.

4. That the Charterers at the port of delivery and the Owners at the port of redelivery shall take over and pay for all coal remaining in Steamer's bunkers, at the current price of the respective ports. The steamer to be re-delivered with not less than 50 tons and not exceeding 200 tons coals in Steamer's bunkers.

5. That the said Charterer shall pay as hire for the said Steamer (\$7.00) *Seven dollars U. S. Gold per ton of dead-weight capacity* per calendar month, commencing from the time the Steamer is placed at the disposal of Charterers, and pro rata for any fractional part of a month (the days to be taken as fractions of a month of 30 days) until her redelivery to Owners as herein stipulated.

That the payment of the hire shall be made as follows: In New York in cash, without discount, monthly in advance, to Owners' New York Agents, Messrs. J. H. Winchester & Co.

In default of such payment or payments, as herein specified, the Owners shall have the faculty of withdrawing the said Steamer from the service of the Charterers, without prejudice to any claim they (the Owners) may otherwise have on the Charterers under this Charter.

6. That the cargo or cargoes shall be laden (with due regard to seaworthiness) and/or discharged by Stevedores appointed by Charterers in any dock, or at any wharf or place the Charterers or their Agents may direct, where the Steamer can always safely lie afloat.

The Owners shall provide gear capable of handling lifts up to two tons and maintain the ordinary cargo gear of the Steamer as fitted, but gear for heavier lifts shall be for Charterers' account.

Any other special gear including any special ropes, hawsers and chains required by the custom of the port for mooring shall be for Charterers' account.

OCEAN SHIPPING**Redelivery**

All runners, ropes and slings actually used for loading and discharging shall be paid for by Charterers.

Notice

7. That the Steamer (unless lost) shall be redelivered on the expiration of this Charter-Party, in same good order as when delivered to the Charterers (fair wear and tear excepted) at an ice-free port in Charterers' option in the UNITED KINGDOM OR ON THE CONTINENT BETWEEN HAVRE AND HAMBURG, BOTH INCLUDED, Six calendar months from the time of delivery at New York, between the hours of 6 A. M. and 6 P. M., but the day of re-delivery shall not be a Sunday or legal Holiday, always unless owners agree to take redelivery earlier.

The Charterers to give the Owners not less than ten days' written notice at which port and on about which day the steamer will be redelivered.

Should the Steamer be on a voyage at the expiration of the period fixed by this Charter, the Charterers are to have the use of the Steamer at the rate and on the conditions herein stipulated to enable them to complete the voyage, provided always that the said voyage was reasonably calculated to be completed about the time fixed for the termination of the Charter.

Money in dispute to be deposited in the joint names of the parties to this charter party with approved bankers at the place of payment of the hire until the dispute has been settled by arbitrators.

Cargo space

8. That the whole reach and lawful burthen of the Steamer, including lawful deck-capacity (compatible with vessel's seaworthiness), not exceeding what she can reasonably stow and carry, shall be at the Charterers' disposal, reserving only proper and sufficient space for Steamer's officers, crew, tackle, apparel, furniture, provisions and stores. When cargo is shipped on deck it shall be at Charterers' or shippers' risk.

Captain

9. That Captain shall prosecute his voyages with the utmost dispatch, and shall render all customary assistance with Ship's crew. Although appointed by the Owners the Captain shall be under the orders and direction of the Charterers as regards employment, agency, or other arrangements; and the Charterers hereby agree to

indemnify the Owners from all consequences or liabilities that may arise from the Captain or Officers personally or by Agents signing Bills of Lading or other documents or otherwise complying with such orders, as well as from any irregularity in the Steamer's papers or for overcarrying goods. Owners shall not be responsible for shortage, mixture, marks, nor for number of pieces or packages, nor for damage to or claims on cargo caused by bad stowage, or otherwise, the Stevedore being employed by the Charterers.

conduct 10. That if the Charterers shall have reason to be dissatisfied with the conduct of the Captain, Officers, or Engineers, the Owners shall on receiving particulars of the complaint, investigate the same, and if necessary and practicable, make a change in the appointments.

**actions
Cap-
s' Logs** 11. That the Charterers shall furnish the Captain from time to time with all requisite instructions and sailing directions in writing and the Captain and Engineer shall keep full and correct logs of the voyage or voyages, which logs are to be accessible and patent to Charterers or their Agents.

breakdown 12. That in the event of loss of time from deficiency of men or Owners' stores, breakdown of machinery, or damage to hull or other accident preventing the working of the Steamer and lasting more than twenty-four consecutive hours, the hire shall cease from the commencement of such loss of time until she be again in an efficient state to resume her service; but should the Steamer be driven into port, or to anchorage by stress of weather, or from any accident to the cargo, or in the event of the Steamer trading to shallow harbours, rivers, or ports, where there are bars causing detention to the Steamer through grounding or otherwise, time so lost and expenses incurred (other than repairs) shall be for Charterers' account.

**cleaning
ers** 13. That the Charterers shall give Owners sufficient time for cleaning boilers.

diligence 14. That throughout this Charter losses or damages whether in respect of goods carried or to be carried or

OCEAN SHIPPING

in other respects arising or occasioned by the following causes shall be absolutely excepted, viz:

The Act of God, perils of the seas, fire on board, in hulk, craft, or on shore, barratry of the Master or Crew, enemies, pirates, robbers, or thieves, arrests and restraints of princes, rulers, and peoples, collisions and strandings, explosions, bursting of boilers, breakage of shafts, or any latent defect, even if existing at the beginning of the voyage, in the hull, boilers, machinery, or appurtenances, negligence, default, or error of judgment of the Pilot, Master, or Crew, or other servants of the Owners, in the management or navigation of the Steamer.

The Steamer has liberty to tow or to be towed and to assist vessels in distress, and to deviate for the purpose of saving life or property.

Advances

15. That should the Captain require funds for ordinary disbursements for Steamer's account at any port, Charterers or their Agents are to advance the same, such advances shall be deducted from the next hire, but Charterers shall in no way be responsible for the application of such advance.

Excluded ports

16. That the steamer shall not be ordered to any port where fever or pestilence is prevalent, or any port blockaded or where hostilities are being carried on, or any ice-bound port, or any port where lights or lightships are or are about to be withdrawn by reason of ice or war, or where there is risk that in the ordinary course of things the steamer will not be able on account of ice to enter the port or to get out after having completed loading or discharging, nor shall steamer be obliged to force ice. Should the steamer be detained by any of the above causes such detention shall be for Charterers' account. Nevertheless, if on account of ice Captain should consider it dangerous to remain at port of loading :- fear of steamer being frozen in and/or damaged he shall have liberty (but not be obliged) to sail to a convenient open place and await Charterers' fresh instructions.

Ices

17. That detention and all expenses arising through quarantine (including cost of fumigation), strikes, lock-outs, shall be for Charterers' account.

Quarantine Detention

18. That should the steamer be lost or missing, the hire shall cease from the date when she was lost or last spoken, or if not spoken, then from the date when last seen, and hire paid in advance and not earned shall be returned to the Charterers

19. That the Steamer is to work day and night if required, all overtime to be paid by Charterers. The Charterers shall pay all overtime (six pence per hour per man) to Officers, Engineers, Firemen and Crew and for all meals properly supplied to Pilots, Stevedores, Tally-men, Custom House Officials and Labourers.

20. That the Charterers shall supply and pay for all dunnage required, but shall have the free use of any dunnage that may be in the steamer.

21. That the Owners have a lien upon all cargoes and all sub-freights for hire and general average contribution, and for all expenses and damages due under or for breach of this charter and Charterers to have a lien on the Steamer for all moneys paid in advance and not earned.

22. That all salvage and assistance to other vessels be for Owners' and Charterers' equal benefit after deducting Master's and Crew's proportion, all legal and other expenses and repairs of damages incurred, including loss of time and coal.

23. That the Charterers shall have the option of sub-letting the Steamer, giving due notice to Owners, but the original Charterers always to remain responsible to Owners for due performance of this Charter.

24. That in the event of war between the nation to whose flag the chartered Steamer belongs and any European power or any other power operating or likely to operate in European waters, Charterers and/or Owners shall have the option of cancelling this Charter.

That no voyage be undertaken, and no goods, documents or persons shipped that would involve risk of seizure, capture, repatriation or penalty by Rulers or Governments.

25. That the Charterers have the option of continuing the Charter for further one period of six (6) calendar

OCEAN SHIPPING

Time for delivery

months each on giving written notice thereof to the Owners at least *thirty* days previous to expiration of the first named and any subsequent term.

26. That the Steamer shall be delivered under this Charter: *not earlier than September 1st, 1919*, and should the steamer not have been delivered latest on the *first day of October, 1919*, Charterers to have the option of cancelling this Charter.

Cancelling

That should it be proved that the Steamer through unforeseen circumstances cannot be delivered by the cancelling date, Charterers, if required, shall within 48 hours after receiving notice thereof declare whether they cancel or will take delivery of the Steamer.

Arbitration

27. That any dispute arising under this Charter shall be referred to arbitration in *New York*, one Arbitrator to be nominated by the Owners and another by the Charterers, and in case such Arbitrators shall not agree, then to the decision of an Umpire who shall be appointed by the said Arbitrators, and the award of the said Arbitrators or Umpire shall be final and binding upon both parties hereto. The Arbitrators including the Umpire shall be Commercial men.

28. General Average shall be settled according to York and Antwerp Rules, 1890.

29. Penalty for non-performance of this contract proved damages.

30. A commission of five per cent. on the hire paid and earned under this Charter and on any continuation is payable to: *J. H. Winchester & Co.*

General Average

Penalty

Brokerage

APPENDIX D

THE HARTER ACT

ACT OF CONGRESS, APPROVED FEBRUARY 13, 1893

An Act relating to navigation of vessels, bills of lading, and to certain obligations, duties and rights in connection with the carriage of property.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Section 1. That it shall not be lawful for the manager, agent, master or owner of any vessel transporting merchandise or property from or between ports of the United States and foreign ports to insert in any bill of lading or shipping document any clause, covenant, or agreement whereby it, he, or they shall be relieved from liability for loss or damage arising from negligence, fault, or failure in proper loading, stowage, custody, care, or proper delivery of any and all lawful merchandise or property committed to its or their charge. Any and all words or clauses of such import inserted in bills of lading or shipping receipts shall be null and void and of no effect.

Section 2. That it shall not be lawful for any vessel transporting merchandise or property from or between ports of the United States of America and foreign ports, her owner, master, agent or manager to insert in any bill of lading or shipping document any covenant or agreement whereby the obligations of the owner or owners of said vessel to exercise due diligence, properly equip, man, provision, and outfit said vessel, and to make said vessel seaworthy and capable of performing her intended voyage, or whereby the obligations of the master, officers, agents, or servants, to carefully handle and stow her cargo and to care for and properly deliver same, shall in any wise be lessened, weakened, or avoided.

Section 3. That if the owner of any vessel transporting merchandise or property to or from any port in the United States of America shall exercise due diligence to make the said vessel in all respects seaworthy and properly manned, equipped, and supplied, neither the vessel, or owners, agents, or charterers shall become or be held responsible for damage or loss resulting from faults or errors in navi-

gation or in the management of said vessel, nor shall the vessel, her owner or owners, charterers, agent, or master, be held liable for losses arising from dangers of the sea or other navigable waters, acts of God, or public enemies, or the inherent defect, quality, or vice of the thing carried, or from insufficiency of package, or seizure under legal process, or for loss resulting from any act or omission of the shipper or owner of the goods, his agent or representative, or from saving or attempting to save life or property at sea, or from any deviation in rendering such service.

Section 4. That it shall be the duty of the owner or owners, master, or agent of any vessel transporting merchandise or property from or between ports of the United States and foreign ports to issue to shippers of any lawful merchandise a bill of lading, or shipping document, stating, among other things, the marks necessary for identification, number of packages, or quantity, stating whether it be carrier's or shipper's weight, and apparent order or condition of such merchandise or property delivered to and received by the owner, master, or agent of the vessel for transportation, and such document shall be *prima facie* evidence of the receipt of the merchandise therein described.

Section 5. That for a violation of any of the provisions of this Act the agent, owner, or master of the vessel guilty of such violation, and who refuses to issue on demand the bill of lading herein provided for, shall be liable to a fine not exceeding two thousand dollars. The amount of the fine and costs for such violation shall be a lien upon the vessel, whose agent, owner, or master is guilty of such violation, and such vessel may be libeled therefor in any district court of the United States, within whose jurisdiction the vessel may be found. One-half of such penalty shall go to the party injured by such violation and the remainder to the Government of the United States.

Section 6. That this Act shall not be held to modify or repeal sections forty-two hundred and eighty-one, forty-two hundred and eighty-two, and forty-two hundred and eighty-three of the Revised Statutes of the United States, or any other statute defining the liability of vessels, their owners, or representatives.

Section 7. Sections one and four of this act shall not apply to the transportation of live animals.

Section 8. That this Act shall take effect from and after the first day of July, eighteen hundred and ninety-three.

APPENDIX E.

UNITED STATES SHIPPING BOARD EMERGENCY FLEET CORPORATION MANAGING AGREEMENT

THIS MANAGING AGREEMENT, made this day of, by and between the United States Shipping Board Emergency Fleet Corporation, the first party, hereinafter called THE CORPORATION, and of the second party, hereinafter called THE MANAGER, Witnesseth:

WHEREAS THE CORPORATION is operating the vessel and certain other vessels and desires to make an agency contract with THE MANAGER for the husbanding and managing of said vessel and such other vessels as it has assigned and may assign to THE MANAGER for such purposes;

Now, THEREFORE, IT IS AGREED AS FOLLOWS:

First. THE CORPORATION hereby appoints THE MANAGER as its agent for the husbanding and managing of the vessel and such other vessels as THE CORPORATION has assigned, and may from time to time assign, to THE MANAGER for such purpose.

Second. THE CORPORATION will provide and pay for all fuel, fresh water, stevedoring, port charges, pilotages, agencies, commissions, and consular charges, except those pertaining to the master, officers, and crew, and all other expenses which are usually borne by a time charterer of a vessel.

Third. THE MANAGER, as such agent:

(a) Shall act as THE MANAGER of the vessel in such trade or service as THE CORPORATION shall direct, being subject to the orders of THE CORPORATION as to voyages, cargoes, priorities of cargoes, charters, rates of freight, and other charges, and as to all matters connected with the use of the vessel.

(b) Shall take proper delivery of the vessel from the Operation or Construction Division of THE CORPORATION, or from the owner, builder, or any one else having control, as THE CORPORATION may direct.

(c) Shall exercise due diligence to man, equip, victual, and supply the vessel, and to provide and pay for all provisions, wages, and

consular, shipping and discharging fees of the master, officers, and crew; all cabin, deck, engine room, and other necessary stores; and all other costs and expenses (except those expenses to be paid by THE MANAGER out of his own funds covered by the compensation and fees hereafter provided for) properly incident to the management of the vessel, including war risk insurance, if any, required by law on the master, officers, and crew.

(d) Shall exercise due diligence to maintain the vessel in a thoroughly efficient state in hull, machinery, tackle, apparel, furniture, and equipment, procuring for and on behalf of THE CORPORATION the necessary labor and material to effect ordinary running repairs and replacements. No extraordinary repairs or expenses shall be made or incurred, and no alteration in hull, machinery, or equipment shall be made, by THE MANAGER, except in serious emergency, without first securing in writing the authorization of THE CORPORATION.

(e) Shall exercise due diligence to see that no damage to the vessel arises from loading improper cargo, from improper stowage, or from improper berthing of the vessel.

(f) Shall whenever no separate Operator is acting, do the things required of an Operator under the terms and conditions of the regular form of Operating Agreement of THE CORPORATION then in use.

(g) Shall hold all moneys collected on behalf of THE CORPORATION, and shall deposit the same in national banks, or banks which are members of the United States Federal Reserve Association, as a separate trust fund to be designated ".....
Name of manager

Shipping Board Fund," and shall not mingle the same with other moneys owned or held by THE MANAGER, and shall make from such funds all disbursements hereinafter authorized to be paid by or to THE MANAGER for account of THE CORPORATION, and shall, promptly after the dispatch of each vessel, or at such other times as may be directed, account to THE CORPORATION for moneys received and disbursed. No items not supported by vouchers aggregating more than \$10 will be allowed.

(h) Shall keep separate accounts in such manner and form as may be prescribed by THE CORPORATION of all moneys collected and disbursed, and accord to accountants and other representatives of THE CORPORATION access to all books and papers, and render such assistance in the examination thereof as THE CORPORATION may require.

(i) Shall exercise due diligence to do or cause to be done all things which would be done by the owner, or the owner's agent, under the usual government form of time charter, attending to all matters in connection with the management of the vessel.

Fourth. THE CORPORATION, in consideration of the services or things herein agreed to be performed, shall pay compensation and allow commissions as follows:

A. Compensation for Management.

- I. For each vessel up to and including the fifth, \$400 per month, and at the same rate for each part of a month;
 - II. For each vessel in excess of five, \$350 per month, and at the same rate for each part of a month.
- Such compensation shall be payable to THE MANAGER from the day of delivery of each vessel to THE MANAGER until redelivery or loss.

B. Commissions for Advancing Funds.

I. If THE MANAGER is without funds of THE CORPORATION, either as THE MANAGER or as THE OPERATOR, for the disbursement of the vessel in foreign or dependency ports, and funds are there advanced by THE MANAGER, or procured from others, a commission will be allowed in accordance with the usual commissions paid in the respective ports, as certified to the United States Shipping Board by the American Steamship Association, and verified by the Comptroller.

Fifth. If THE MANAGER shall knowingly permit any cargo to be carried without the consent of THE CORPORATION or THE OPERATOR, THE MANAGER shall receive no commission, fee, or other compensation for any services rendered during the voyage.

Sixth. Whenever THE CORPORATION may legally have the advantage of any existing or future contracts of THE MANAGER for the purchase of material, fuel, supplies, or equipment, it shall have the benefit thereof, provided that such contracts may be made available to THE CORPORATION without unreasonably interfering with the requirements of other vessels owned or operated by THE MANAGER.

Seventh. THE CORPORATION shall reimburse THE MANAGER for all disbursements properly incurred on its behalf as authorized in this agreement.

Eighth. All salvages shall be for the benefit of THE CORPORATION. This provision, however, shall not be construed to deprive THE

MANAGER of any right to salvage reserved to THE MANAGER as vessel owner under any charter.

Ninth. THE CORPORATION shall have the right, at any time, to terminate this agreement as to any or all vessels assigned to THE MANAGER, and to assume forthwith control of any or all of the vessels, and to collect directly all freights, moneys, or other charges remaining unpaid. THE MANAGER, however, in such case shall adjust, settle, and liquidate the current business of the vessels if so required by THE CORPORATION.

Tenth. Upon giving THE CORPORATION thirty days' written notice, THE MANAGER shall have the right to terminate this agreement, such termination not to become effective as to any vessel until its arrival and discharge at a United States port. THE MANAGER shall, however, if required by THE CORPORATION, adjust, settle, and liquidate the current business of the vessel.

Eleventh. THE MANAGER shall, at the time of execution and delivery of this agreement, or at any other time, if so required by THE CORPORATION, furnish a satisfactory bond in such amount as THE CORPORATION may order, for the faithful and proper discharge of the obligations and duties hereunder assumed.

Twelfth. This agreement is made with the distinct understanding that THE MANAGER has in his service a competent shore force consisting of at least one port captain and one port engineer, and in the event that six or more vessels are assigned to THE MANAGER, one port steward, each of whom has had actual sea experience in his respective capacity.

Thirteenth. This Agreement shall apply to the management of all vessels assigned to THE MANAGER, sailing from United States ports on or after the 1st day of March, 1919.

WITNESS AS TO SIGNATURE:

.....

WITNESS AS TO SIGNATURE:

.....

**UNITED STATES SHIPPING BOARD
EMERGENCY FLEET CORPORATION,**

By

Director of Operations.

By

The Manager.

APPENDIX F

UNITED STATES SHIPPING BOARD EMERGENCY FLEET CORPORATION OPERATING AGREEMENT

IS OPERATING AGREEMENT, made this.....day of.....
id between the United States Shipping Board Emergency Fleet
oration, the first party, hereinafter called THE CORPORATION,
..... of
econd party, hereinafter called THE OPERATOR, Witnesseth:

HEREAS, THE CORPORATION is operating the vessel
certain other vessels and desires to make an agency contract
THE OPERATOR for the operation of said vessel and such other
as it has assigned and may assign to THE OPERATOR for such
use;

W, THEREFORE, IT IS AGREED AS FOLLOWS:

1st. THE CORPORATION hereby appoints THE OPERATOR as its
t for the operation of the vessel
such other vessels as THE CORPORATION has assigned, and may
time to time assign, to THE OPERATOR for such purposes.

cond. THE CORPORATION will man, equip, victual, and supply the
l, and provide and pay for all provisions, wages, and consular
ing, and discharging fees of the master, officers, and crew, and
abin, deck, engine room, and other necessary stores; and will
use due diligence to maintain the vessel in a thoroughly efficient
in hull, machinery, tackle, apparel, furniture, and equipment
and during service.

3rd. THE OPERATOR, as such agent:

) Shall operate the vessel in such trade or service as THE COR-
RION shall direct, being subject to the orders of THE CORPO-
as to voyages, cargoes, priorities of cargoes, charters, rates of
ht, and other charges, and as to all matters connected with the
of the vessel.

) Shall provide and pay for all fuel, fresh water, stevedoring,
charges, pilotages, agencies, commissions, and consular charges,
pt those pertaining to the master, officers, and crew, and all

other expenses which are usually borne by a time charterer of a vessel.

(c) Shall exercise due diligence to see that all freight is prepaid, except when otherwise instructed by THE CORPORATION, or where the prevailing customs in the particular trade are to the contrary, in which case freight may be made payable at destination in accordance with such custom. All freight in cases where cargo is perishable or not worth the freight charges must be prepaid unless the custom of the trade is to the contrary.

(d) Shall issue or cause to be issued to shippers customary freight contracts and bills of lading, and shall exercise due diligence to see that such bills of lading contain all exemptions and stipulations usual to the particular trade or service in which the vessel may be engaged, and reserve to THE CORPORATION a lien upon all cargoes for the payment of freight, primage charges, dead freight, demurrage, forwarding charges, advance charges for carriage to port of shipment, for contributions in general average and special charges of cargo, and for all fines or damages which the vessel or cargoes may incur by reason of illegal, incorrect, or insufficient marking or addressing of packages, or description of their contents, and in trades where customary, make the shipments subject to usual war clauses to the "Harter Act," to a provision that all general average shall be settled, unless otherwise directed by THE CORPORATION, at New York in accordance with York-Antwerp rules of 1890, and Antwerp rule of 1903, and otherwise in accordance with the rules and customs of the port of New York, and also subject to the following clause:

"If the owner of the ship shall have exercised due diligence to make said ship in all respects seaworthy and properly manned, equipped, and supplied it is hereby agreed that in case of loss, damage, danger, or disaster resulting from fault or negligence of the pilot, master, or crew, in the navigation or management of the ship, or from latent or other defects or unseaworthiness of the ship, whether existing at the time of shipment or at the beginning of the voyage or on the voyage, but not discoverable by due diligence, the owner shall not be liable therefor, and the consignee or owners of the cargo shall not be exempt from liability for contribution in general average, or for any special charges incurred, but with the shipowner shall contribute in general average and shall pay such special charges as if such loss, damage, danger, or disaster had not resulted from such fault, negligence, latent or other defect, or unseaworthiness."

(e) Shall collect all freights and other money due THE CORPORATION, advance all funds for all expenses properly to be paid by him as agent, and take proper general average security.

f) Shall hold all money collected on behalf of THE CORPORATION, and shall deposit the same in national banks, or banks which members of the United States Federal Reserve Association, as separate trust fund, to be designated ".....

Name of agent

pping Board Fund," and shall not mingle the same with other moneys owned or held by THE OPERATOR, and shall make from such funds all disbursements hereinafter authorized to be paid by or to THE OPERATOR for account of THE CORPORATION, and shall, promptly after the dispatch of each vessel, or at such other times as may be directed, account to THE CORPORATION for moneys received and disbursed. No items unsupported by vouchers aggregating more than \$..... will be allowed.

g) Shall keep separate accounts in such manner and form as may be prescribed by THE CORPORATION of all moneys collected and disbursed, and accord to accountants and other representatives of THE CORPORATION access to all books and papers, and render such assistance in the examination thereof as THE CORPORATION may require.

h) Shall, in order to prevent speculation in freight or passenger space, exercise due diligence to see that all freight contracts show the name of actual shipper, commodities, quantities, and freight rates, except that in coastwise trade of the United States and in the West Indies trade the freight rate need not be shown on permits, but must be shown on bills of lading and must be the rate in current tariffs. Space allotted to the original shipper may be sublet on any terms and conditions whatsoever, without the consent of THE CORPORATION. THE OPERATOR shall, without the consent of THE CORPORATION, unwillingly carry any cargo, the space for which has been sublet by the original shipper upon any terms or conditions whatsoever. THE OPERATOR shall receive no commission, fee, or other compensation for any services rendered during the voyage.

i) Shall exercise due diligence to see that all bills of lading when issued agree with the freight contracts, that all wharf receipts for freight are non-negotiable, and that a freight contract or permit is issued for each shipment.

j) Shall exercise due diligence to perform or cause to be performed all of the customary agency duties concerned with loading and discharging cargoes at all ports included in the vessel's itinerary,

OCEAN SHIPPING

and all things necessary for the protection and safeguarding of the interests of THE CORPORATION.

Fourth. THE CORPORATION, in consideration of the services or things herein agreed to be performed, shall pay compensation and allow commissions and fees, as follows:

A. Compensation Payable to THE OPERATOR

I. On all vessels except tankers.

(a) From United States ports:

- (1) On general cargo, a commission of 2½ per cent on the gross ocean freight list.*
- (2) On bulk cargo, a commission of 1½ per cent on the gross ocean freight list.*

The term "bulk cargo," as used herein, shall include a cargo, a substantial part (amounting to 50 per cent or more) of which is loaded at one port and discharged at one port, when covered by one bill of lading, and delivery is made without regard to marks or numbers, and all United States Government cargoes, where vessel is exclusively laden therewith. Whenever the excess over such substantial part is general cargo, the commission payable on general cargo as above shall be paid on the freight earnings on such excess. Where Government cargoes are carried, and no charge or nominal charge is made therefor, the commissions and fees shall be based upon a freight schedule established in each case by the United States Shipping Board for such purpose.

(b) Into United States ports from foreign and dependency ports, a fee of \$250 for each vessel.

The term "dependency ports," as used herein, shall include ports in the Hawaiian Islands, Porto Rico, Virgin Islands, Guam, Canal Zone, Philippine Islands, and Alaska.

(c) From or into United States ports, one commission of 5 per cent. on all mails, express, and commercial passenger revenue. This commission covers all agency commissions and fees

pendency ports, except brokerages authorized to be paid under C-II.

On tankers.

Between United States ports and foreign and dependency ports, a fee of \$100 for each vessel.

- I. *Commissions and fees payable to others than THE OPERATOR for unloading, loading, and attendance at foreign and dependency ports.*

On all vessels including tankers.

- (a) A commission or fee for agency services in accordance with the usual commissions and fees paid in the respective ports, as certified to the United States Shipping Board by the American Steamship Association, and verified by the comptroller; provided that any commission or fee paid for attending to any mail, express, or commercial passenger revenues shall be borne by THE OPERATOR out of the commission allowed him under A-I(c), supra, except the brokerages authorized to be paid under C-II.

The same customary commission and fees of the port will be allowed the branch house of THE OPERATOR as would be allowed to others than such branch house.

C. Commissions and Fees not otherwise authorized.

In cases where freight and charter brokerages are necessarily or properly incurred in United States ports to secure cargoes and charters, and are paid in accordance with the usages of the trade, a brokerage commission not exceeding $1\frac{1}{4}$ per cent. will be allowed. In such cases in foreign or dependency ports, freight and charter brokerages will be allowed with the usual commissions and fees paid in the respective ports, as certified to the United States Shipping Board by the American Steamship Association, and verified by the comptroller.

In cases where passenger tickets are necessarily sold through a broker in foreign or dependency ports, a brokerage commission will be allowed in accordance with the usual commissions in the respective ports, as certified to the United States Ship-

OCEAN SHIPPING

ping Board by the American Steamship Association, and verified by the comptroller.

III. If THE OPERATOR is without funds THE CORPORATION to disbursements of the vessel in foreign or dependency and funds are there advanced by THE OPERATOR, or pre from others, a commission will be allowed in accordance the usual commissions paid in the respective ports, as o to the United States Shipping Board by the American :hip Association, and verified by the comptroller.

IV. For entering and clearing a vessel light or in ballast in from United States ports from and to foreign or dependency ports, respectively, or into and from United States A ports from and into United States Pacific ports, respe a fee of \$20 will be allowed. No fee will be allowed : tering or clearing vessels light or in ballast into and United States ports from and into United States port than those above mentioned.

V. If the vessel, after cargo is booked, is diverted by THE CORPORATION to a port other than that named or contemplated in original shipping documents, no additional compensation be paid on any increase in freight earnings resulting such diversion, but THE OPERATOR will be paid an ad fee of \$250 for performing the services incidental and necessary to the diversion.

Fifth. Whenever THE CORPORATION may legally have the tage of existing or future contract of THE OPERATOR for the chace of material, fuel, supplies, or equipment, it shall ha benefit thereof, provided that such contracts may be made a to THE CORPORATION without unreasonably interfering wit requirements of other vessels owned or operated by THE OPER

Sixth. THE CORPORATION shall reimburse THE OPERATOR disbursements properly incurred on its behalf as authorized agreement.

Seventh. All salvages shall be for the benefit of THE CORPORATION. This provision, however, shall not be construed to give THE OPERATOR of any right to salvage reserved to THE OPER vessel owner under any charter.

Eighth. THE CORPORATION shall have the right at any time to terminate this agreement as to any or all vessels assigned to THE OPERATOR, and to assume forthwith control of any or all

els, and to collect directly all freights, moneys, or other charges aining unpaid. THE OPERATOR, however, in such cases shall ad-, settle, and liquidate the current business of the vessels if so re-
ed by THE CORPORATION.

ifth. Upon giving THE CORPORATION thirty days' written notice, : OPERATOR shall have the right to terminate this agreement, said nition not to become effective as to any vessel until its arrival discharge at a United States port. THE OPERATOR shall, how-
, if required by THE CORPORATION, adjust, settle, and liquidate current business of the vessel.

enth. THE OPERATOR shall, at the time of execution of this ement, or at any other time, if so required by THE CORPO-
, furnish a satisfactory bond in such amount as THE CORPO-
may order for the faithful and proper discharge of the obliga-
s and duties hereunder assumed.

leventh. This agreement shall apply to the operation of all ves-
assigned to THE OPERATOR, sailing from United States ports on
fter the 1st day of March, 1919.

WITNESS AS TO SIGNATURE:

.....

WITNESS AS TO SIGNATURE:

.....

**UNITED STATES SHIPPING BOARD
EMERGENCY FLEET CORPORATION,**

By

Director of Operations.

By

The Operator.

APPENDIX G

MERCHANT MARINE ACT, 1920.

AN ACT

To provide for the promotion and maintenance of the American merchant marine, to repeal certain emergency legislation, and provide for the disposition, regulation, and use of property acquired thereunder, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it is necessary for the national defense and for the proper growth of its foreign and domestic commerce that the United States shall have a merchant marine of the best equipped and most suitable types of vessels sufficient to carry the greater portion of its commerce and serve as a naval or military auxiliary in time of war or national emergency, ultimately to be owned and operated privately by citizens of the United States; and it is hereby declared to be the policy of the United States to do whatever may be necessary to develop and encourage the maintenance of such a merchant marine, and, in so far as may not be inconsistent with the express provisions of this Act, the United States Shipping Board shall, in the disposition of vessels and shipping property as hereinafter provided, in the making of rules and regulations, and in the administration of the shipping laws keep always in view this purpose and object as the primary end to be attained.

SEC. 2. (a) That the following Acts and parts of Acts are hereby repealed, subject to the limitations and exceptions hereinafter, in this Act provided:

(1) The emergency shipping fund provisions of the Act entitled "An Act making appropriations to supply urgent deficiencies in appropriations for the Military and Naval Establishments on account of war expenses for the fiscal year ending June 30, 1917, and for other purposes," approved June 15, 1917, as amended by the Act entitled "An Act to amend the emergency shipping fund provisions of the Urgent Deficiency Appropriation Act, approved June 15, 1917, so as to empower the President and his designated agents to take over certain transportation systems for the transportation of ship-

"ard and plant employees, and for other purposes," approved April 2, 1918, and as further amended by the Act entitled "An Act making appropriation to supply deficiencies in appropriations for the fiscal year ending June 30, 1919, and prior fiscal years, on account of war expenses, and for other purposes," approved November 4, 1918;

- (2) Section 3 of such Act of April 22, 1918;
- (3) The paragraphs numbered 2 and 3 under the heading "Emergency shipping fund" in such Act of November 4, 1918; and
- (4) The Act entitled "An Act to confer on the President power to prescribe charter rates and freight rates and to requisition vessels, and for other purposes," approved July 18, 1918.

(5) Sections 5, 7 and 8, Shipping Act, 1916.
(b) The repeal of such Acts or parts of Acts is subject to the following limitations:

- (1) All contracts or agreements lawfully entered into before the passage of this Act under any such Act or part of Act shall be assumed and carried out by the United States Shipping Board, herein-after called "the board."
- (2) All rights, interests, or remedies accruing or to accrue as a result of any such contract or agreement or of any action taken in pursuance of any such Act or parts of Acts shall be in all respects valid, and may be exercised and enforced in like manner, subject to the provisions of subdivision (c) of this section, as if this Act had not been passed.
- (3) The repeal shall not have the effect of extinguishing any penalty incurred under such Acts or parts of Acts, but such Acts or parts of Acts shall remain in force for the purpose of sustaining a prosecution for enforcement of the penalty therein provided for the violation thereof.
- (4) The board shall have full power and authority to complete or conclude any construction work begun in accordance with the provisions of such Acts or parts of Acts if, in the opinion of the board, the completion or conclusion thereof is for the best interests of the United States.
- (c) As soon as practicable after the passage of this Act the board shall adjust, settle, and liquidate all matters arising out of or incident to the exercise by or through the President of any of the powers or duties conferred or imposed upon the President by any such Act or parts of Acts; and for this purpose the board,

instead of the President, shall have and exercise any of such powers and duties relating to the determination and payment of just compensation: Provided, That any person dissatisfied with any decision of the board shall have the same right to sue the United States as he would have had if the decision had been made by the President of the United States under the Acts hereby repealed.

SEC. 3. (a) That Section 3 of the "Shipping Act, 1916," is amended to read as follows:

"SEC. 3. That a board is hereby created to be known as the United States Shipping Board and hereinafter referred to as the board. The board shall be composed of seven commissioners, to be appointed by the President, by and with the advice and consent of the Senate; and the President shall designate the member to act as chairman of the board, and the board may elect one of its members as vice chairman. Such commissioners shall be appointed as soon as practicable after the enactment of this Act and shall continue in office, two for a term of one year, and the remaining five for terms of two, three, four, five, and six years, respectively, from the date of their appointment, the term of each to be designated by the President, but their successors shall be appointed for terms of six years, except that any such person chosen to fill a vacancy shall be appointed only for the unexpired term of the commissioner whom he succeeds. The commissioners shall be appointed with due regard to their fitness for the efficient discharge of the duties imposed on them by this Act, and two shall be appointed from the States touching the Pacific Ocean, two from the States touching the Atlantic Ocean, one from the States touching the Gulf of Mexico, one from the States touching the Great Lakes, and one from the interior, but not more than one shall be appointed from the same State. Not more than four of the commissioners shall be appointed from the same political party. A vacancy in the board shall be filled in the same manner as the original appointments. No commissioner shall take any part in the consideration or decision of any claim or particular controversy in which he has a pecuniary interest. Each commissioner shall devote his time to the duties of his office, and shall not be in the employ of or hold any official relation to any common carrier or other person subject to this Act, nor while holding such office acquire any stock or bonds thereof or become pecuniarily interested in any such carrier. The duties of the board may be so divided that under its supervision the directorship of various activities may be assigned

~~to one or more commissioners. Any commissioner may be removed by the President for inefficiency, neglect of duty, or malfeasance in office.~~ A vacancy in the board shall not impair the right of the remaining members of the board to exercise all its powers. The board shall have an official seal, which shall be judicially noticed. The board may adopt rules and regulations in regard to its *procedure* and the conduct of its business. The board may employ within the limits of appropriations made therefore by Congress such attorneys as it finds necessary for proper legal service to the board in the conduct of its work, or for proper representation of the public interest in investigations made by it or proceedings pending before it whether at the board's own instance or upon complaint, or to appear for or represent the board in any case in court or other tribunal.

~~"The board shall have such other rights and perform such other duties not inconsistent with the Merchant Marine Act, 1920, as are conferred by existing law upon the board in existence at the time this section as amended takes effect.~~

~~"The commissioners in office at the time this section as amended takes effect shall hold office until all the commissioners provided for in this section as amended are appointed and qualify."~~

(b) The first sentence of Section 4 of the "Shipping Act, 1916," is amended to read as follows:

~~"SEC. 4. That each member of the board shall receive a salary of \$12,000 per annum."~~

~~Sec. 4. That all vessels and other property or interests of whatsoever kind, including vessels or property in course of construction or contracted for, acquired by the President through any agencies whatsoever in pursuance of authority conferred by the Acts or parts of Acts repealed by Section 2 of this Act, or in pursuance of the joint resolution entitled "Joint resolution authorizing the President to take over for the United States the possession and title of any vessel within its jurisdiction, which at the time of coming therein was owned in whole or in part by any corporation, citizen, or subject of any nation with which the United States may be at war, or was under register of any such nation, and for other purposes," approved May 12, 1917, with the exception of vessels and property the use of which is in the opinion of the President required by any other branch of the Government service of the United States, are hereby transferred to the board: Provided, That all vessels in the military and naval service of the United States, including the vessels~~

assigned to river and harbor work, inland waterways, or vessels for such needs in the course of construction or under contract by the War Department, shall be exempt from the provisions of this Act.

SEC. 5. That in order to accomplish the declared purposes of this Act, and to carry out the policy declared in Section 1 hereof, the board is authorized and directed to sell, as soon as practicable, consistent with good business methods and the objects and purposes to be attained by this Act, at public or private competitive sale after appraisement and due advertisement, to persons who are citizens of the United States, except as provided in Section 6 of this Act, all of the vessels referred to in Section 4 of this Act or otherwise acquired by the board. Such sale shall be made at such prices and on such terms and conditions as the board may prescribe, but the completion of the payment of the purchase price and interest shall not be deferred more than fifteen years after the making of the contract of sale. The board in fixing or accepting the sale price of such vessels shall take into consideration the prevailing domestic and foreign market price of, the available supply of, and the demand for vessels, existing freight rates and prospects of their maintenance, the cost of constructing vessels of similar types under prevailing conditions, as well as the cost of the construction or purchase price of the vessels to be sold, and any other facts or conditions that would influence a prudent, solvent business man in the sale of similar vessels or property which he is not forced to sell. All sales made under the authority of this Act shall be subject to the limitations and restrictions of Section 9 of the "Shipping Act, 1916," as amended.

SEC. 6. That the board is authorized and empowered to sell to aliens, at such prices and on such terms and conditions as it may determine, not inconsistent with the provisions of Section 5 (except that completion of the payment of the purchase price and interest shall not be deferred more than ten years after the making of the contract of sale), such vessels as it shall, after careful investigation, deem unnecessary to the promotion and maintenance of an efficient American merchant marine; but no such sale shall be made unless the board, after diligent effort, has been unable to sell, in accordance with the terms and conditions of Section 5, such vessels to persons citizens of the United States, and has, upon an affirmative vote of not less than five of its members, spread upon the minutes of the board, determined to make such sale; and it shall make as a part of

full statement of its reasons for making such sale.ents of purchase price of vessels under this section est at the rate of not less than 5½ per cent. per anemi-annually.

the board is authorized and directed to investigate as promptly as possible after the enactment of this time to time thereafter what steamship lines should nd put in operation from ports in the United States, y, District, or possession thereof to such world and ts as in its judgment are desirable for the promoto-nt, expansion, and maintenance of the foreign and of the United States, and an adequate postal service, ne the type, size, speed, and other requirements of be employed upon such lines and the frequency and eir sailings, with a view to furnishing adequate, regu- permanent service. The board is authorized to sell, :tory sale can not be made, to charter such of the ves- in Section 4 of this Act or otherwise acquired by the eet these requirements to responsible persons who are United States who agree to establish and maintain such terms of payment and other conditions as the board and necessary to secure and maintain the service de- y such steamship line is deemed desirable and neces- such citizen can be secured to supply such service by charter of vessels on terms satisfactory to the board, operate vessels on such line until the business is de- such vessels may be sold on satisfactory terms and the ed, or unless it shall appear within a reasonable time an not be made self-sustaining. The Postmaster Gen- ed, notwithstanding the Act entitled, "An Act to pro- mail service between the United States and foreign mome commerce," approved March 3, 1891, to contract of the mails over such lines at such price as may be he board and the Postmaster General: Provided, That e sale or assignment of vessels for operation on such shall be given to persons who are citizens of the ho have the support, financial and otherwise, of the inities primarily interested in such lines if the board ie ability of such persons to maintain the service de- sed to be maintained, or to persons who are citizens

of the United States who may then be maintaining a service from the port of the United States to or in the general direction of the world market port to which the board has determined that such service shall be established: Provided further, That where steamship lines and regular service have been established and are being maintained by ships of the board at the time of the enactment of this Act, such lines and service shall be maintained by the board until, in the opinion of the board, the maintenance thereof is unbusiness-like and against the public interest: And provided further, That whenever the board shall determine, as provided in this Act, that trade conditions warrant the establishment of a service or additional service under Government administration, where a service is already being given by persons, citizens of the United States, the rates and charges for such Government service shall not be less than the cost thereof, including a proper interest and depreciation charge on the value of Government vessels and equipment employed therein.

SEC. 8. That it shall be the duty of the board, in co-operation with the Secretary of War, with the object of promoting, encouraging, and developing ports and transportation facilities in connection with water commerce over which it has jurisdiction, to investigate territorial regions and zones tributary to such ports, taking into consideration the economies of transportation by rail, water and highway and the natural direction of the flow of commerce; to investigate the causes of the congestion of commerce at ports and the remedies applicable thereto; to investigate the subject of water terminals, including the necessary docks, warehouses, apparatus, equipment, and appliances in connection therewith, with a view to devising and suggesting the types most appropriate for different locations and for the most expeditious and economical transfer or interchange of passengers or property between carriers by water and carriers by rail; to advise with communities regarding the appropriate location and plan of construction of wharves, piers, and water terminals; to investigate the practicability and advantages of harbor, river, and port improvements in connection with foreign and coast-wise trade; and to investigate any other matter that may tend to promote and encourage the use by vessels of ports adequate to care for the freight which would naturally pass through such ports: Provided, That if after such investigation the board shall be of the opinion that rates, charges, rules, or regulations of common carriers by rail subject to the jurisdiction of the Interstate Commerce Com-

sion are detrimental to the declared object of this section, or that
r rates, charges, rules, or regulations, new or additional port
ninal facilities, or affirmative action on the part of such common
riers by rail is necessary to promote the objects of this section

board may submit its findings to the Interstate Commerce Com-
mission for such action as such commission may consider proper
ler existing law.

SEC. 9. That if the terms and conditions of any sale of a vessel
de under the provisions of this Act include deferred payments
the purchase price, the board shall require, as part of such terms
l conditions, that the purchaser of the vessel shall keep the same
ared (a) against loss or damage by fire, and against marine risks
l disasters, and war and other risks if the board so specifies, with
h insurance companies, associations, or underwriters, and under
h forms of policies, and to such an amount, as the board may
scribe or approve; and (b) by protection and indemnity insur-
e with such insurance companies, associations, or underwriters
l under such forms of policies, and to such an amount as the
rd may prescribe or approve. The insurance required to be
ried under this section shall be made payable to the board and/or
the parties as interest may appear. The board is authorized to
er into any agreement that it deems wise in respect to the pay-
nt and/or the guarantee of premiums of insurance.

SEC. 10. That the board may create out of net revenue from
operations and sales, and maintain and administer, a separate in-
ance fund, which it may use to insure in whole or in part, against
hazards commonly covered by insurance policies in such cases,
r interest of the United States (1) in any vessel, either construct-
or in process of construction, and (2) in any plants or materials
etofore or hereafter acquired by the board or hereby transferred
the board.

SEC. 11. That during a period of five years from the enactment of
s Act the board may annually set aside out of the revenues from
es and operations a sum not exceeding \$25,000,000, to be known
its construction loan fund, to be used in aid of the construction
vessels of the best and most efficient type for the establishment
l maintenance of service on steamship lines deemed desirable and
cessary by the board, and such vessels shall be equipped with the
st modern, the most efficient, and the most economical machinery
l commercial appliances. The board shall use such fund to the ex-

tent required upon such terms as the board may prescribe to aid sons, citizens of the United States, in the construction by them in vate shipyards in the United States of the foregoing class of ve: No aid shall be for a greater sum than two-thirds of the cost of vessel or vessels to be constructed, and the board shall require security, including a first lien upon the entire interest in the v or vessels so constructed as it shall deem necessary to insure repayment of such sum with interest thereon and the mainten of the service for which such vessel or vessels are built.

SEC. 12. That all vessels may be reconditioned and kept in able repair and until sold shall be managed and operated by board or chartered or leased by it on such terms and conditions the board shall deem wise for the promotion and maintenance an efficient merchant marine, pursuant to the policy and purpose declared in sections 1 and 5 of this Act; and the United States Shipping Board Emergency Fleet Corporation shall continue in existence and have authority to operate vessels, unless otherwise directed by law, until all vessels are sold in accordance with the provisions of this Act, the provision in Section 11 of the "Shipping Act, 1916," to the contrary notwithstanding.

SEC. 13. That the board is further authorized to sell all property other than vessels transferred to it under Section 4 upon such terms and conditions as the board may determine and prescribe.

SEC. 14. That the net proceeds derived by the board prior to July 1, 1921, from any activities authorized by this Act, or by "Shipping Act, 1916," or by the Acts specified in Section 2 of this Act, except such an amount as the board shall deem necessary to withhold as operating capital, for the purposes of Section 12 hereof, and for the insurance fund authorized in Section 10 hereof, for the construction loan fund authorized in Section 11 hereof, shall be covered into the Treasury of the United States to the credit of the board and may be expended by it within the limits of the amounts heretofore or hereafter authorized, for the construction, requisitioning, or purchasing of vessels. After July 1, 1921, such net proceeds, less such an amount as may be authorized annually by Congress to be withheld as operating capital, and less such sums as may be needed for such insurance and construction loan funds, shall be covered into the Treasury of the United States as miscellaneous receipts. The board shall, as rapidly as it deems advisable, withdraw investment of Government funds made during the en-

r the authority conferred by the Acts or parts of Acts
Section 2 of this Act and cover the net proceeds thereof
casury of the United States as miscellaneous receipts.

That the board shall not require payment from the War
for the charter hire of vessels owned by the United
ernment furnished by the board from July 1, 1918, to
19, inclusive, for the use of such department.

That all authorization to purchase, build, requisition,
ange, or otherwise acquire houses, buildings, or land
Act entitled "An Act to authorize and empower the
es Shipping Board Emergency Fleet Corporation to pur-
, requisition, or otherwise acquire, and to sell or other-
e of improved or unimproved lands, houses, buildings,
ier purposes," approved March 1, 1918, is hereby term-
ovided, however, That expenditures may be made under
r the repair of houses and buildings already constructed,
npletion of such houses or buildings as have heretofore
cted for or are under construction, if considered ad-

the board is authorized and directed to dispose of all
ties or the interest of the United States in all such
it as early a date as practicable, consistent with good
d the best interests of the United States.

That the board is authorized and directed to take over
1, 1921, the possession and control of and to maintain
, all docks, piers, warehouses, wharves and terminal
nd facilities, including all leasehold easements, rights of
in rights and other rights, estates and interests therein
ant thereto, acquired by the President by or under the

"An Act making appropriations to supply urgent de-
appropriations for the fiscal year ending June 30, 1918,
scal years, on account of war expenses, and for other
pproved March 28, 1918. The possession and control of
docks, piers, warehouses, wharves and terminal equip-
cilities or part thereof, including all leasehold easements,
ay, riparian rights and other rights, estates or interests
ppurtenant thereto which were acquired by the War De-
· the Navy Department for military or naval purposes
war emergency may be transferred by the President to
henever the President deems such transfer to be for the
s of the United States.

The President may at any time he deems it necessary, by order setting out the need therefore and fixing the period of such need permit or transfer the possession and control of any part of the property taken over by or transferred to the board under this section to the War Department or the Navy Department for their needs, and when in the opinion of the President such need therefor ceases the possession and control of such property shall revert to the board. None of such property shall be sold except as may be hereafter provided by law.

SEC. 18. That Section 9 of the "Shipping Act, 1916," is amended to read as follows:

"SEC. 9. That any vessel purchased, chartered, or leased from the board, by persons who are citizens of the United States, may be registered or enrolled and licensed, or both registered and enrolled and licensed, as a vessel of the United States and entitled to the benefits and privileges appertaining thereto; Provided, That foreign-built vessels admitted to American Registry or enrollment and license under this Act, and vessels owned by any corporation in which the United States is a stockholder, and vessels sold, leased, or chartered by the board to any person a citizen of the United States, as provided in this Act, may engage in the coastwise trade of the United States while owned, leased, or chartered by such a person.

"Every vessel purchased, chartered, or leased from the board shall, unless otherwise authorized by the board, be operated only under such registry or enrollment and license. Such vessels while employed solely as merchant vessels shall be subject to all laws, regulations, and liabilities governing merchant vessels, whether the United States be interested therein as owner, in whole or in part, or hold any mortgage, lien, or other interest therein.

"It shall be unlawful to sell, transfer or mortgage, or, except under regulations prescribed by the board, to charter, any vessel purchased from the board or documented under the laws of the United States to any person not a citizen of the United States, or to put the same under a foreign registry or flag, without first obtaining the board's approval.

"Any vessel chartered, sold, transferred or mortgaged to a person not a citizen of the United States or placed under a foreign registry or flag, or operated, in violation of any provision of this section shall be forfeited to the United States, and whoever violates any provision of this section shall be guilty of a misdemeanor and subject

a fine of not more than \$5,000, or to imprisonment for not more than five years, or both."

SEC. 19. (1) The board is authorized and directed in aid of the accomplishment of the purposes of this Act (a) to make all necessary rules and regulations to carry out the provisions of this Act; (b) to make rules and regulations affecting shipping in the foreign trade not in conflict with law in order to adjust or meet general special conditions unfavorable to shipping in the foreign trade, either in any particular trade or upon any particular route or in commerce generally and which arise out of or result from foreign vessels, rules or regulations or from competitive methods or practices employed by owners, operators, agents, or masters of vessels of a foreign country; and (c) to request the head of any department, board, bureau, or agency of the Government to suspend, modify, or annul rules or regulations which have been established by such department, board, bureau, or agency, or to make new rules or regulations affecting shipping in the foreign trade other than such rules or regulations relating to the Public Health Service, the Consular Service, and the Steamboat-Inspection Service.

(2) No rule or regulation shall hereafter be established by any department, board, bureau, or agency of the Government which affects shipping in the foreign trade, except rules or regulations affecting the Public Health Service, the Consular Service, and the Steamboat-Inspection Service, until such rule or regulation has been submitted to the board for its approval and final action has been taken thereon by the board or the President.

(3) Whenever the head of any department, board, bureau, or agency of the Government refuses to suspend, modify, or annul any rule or regulation, or make a new rule or regulation upon request of the board, as provided in subdivision (c) of paragraph (1) of this section, or objects to the decision of the board in respect to the approval of any rule or regulation, as provided in paragraph (2) of this section, either the board or the head of the department, board, bureau, or agency which has established or is attempting to establish such rule or regulation in question, may submit the facts to the President, who is hereby authorized to establish or suspend, modify, or annul such rule or regulation.

(4) No rule or regulation shall be established which in any manner gives vessels owned by the United States any preference or favor

over those vessels documented under the laws of the United States and owned by persons who are citizens of the United States.

Sec. 20. (1) That Section 14 of the "Shipping Act, 1916," as amended, is amended to read as follows:

"Sec. 14. That no common carrier by water shall, directly or indirectly, in respect to the transportation by water of passengers or property between a port of a State, Territory, District, or possession of the United States and any other such port or a port of a foreign country—

"First. Pay, or allow, or enter into any combination, agreement, or understanding, express or implied, to pay or allow, a deferred rebate to any shipper. The term 'deferred rebate' in this Act means a return of any portion of the freight money by a carrier to any shipper as a consideration for the giving of all or any portion of his shipments to the same or any other carrier, or for any other purpose, the payment of which is deferred beyond the completion of the service for which it is paid, and is made only if, during both the period for which computed and the period of deferment, the shipper has complied with the terms of the rebate agreement or arrangement.

"Second. Use a fighting ship either separately or in conjunction with any other carrier, through agreement or otherwise. The term 'fighting ship' in this Act means a vessel used in a particular trade by a carrier or group of carriers for the purpose of excluding, preventing, or reducing competition by driving another carrier out of said trade.

"Third. Retaliate against any shipper by refusing, or threatening to refuse, space accommodations when such are available, or resort to other discriminating or unfair methods, because such shipper has patronized any other carrier or has filed a complaint charging unfair treatment, or for any other reason.

"Fourth. Make any unfair or unjustly discriminatory contract with any shipper based on the volume of freight offered, or unfairly treat or unjustly discriminate against any shipper in the matter of (a) cargo-space accommodations or other facilities, due regard being had for the proper loading of the vessel and the available tonnage; (b) the loading and landing of freight in proper condition; or (c) the adjustment and settlement of claims.

"Any carrier who violates any provision of this section shall be

a misdemeanor punishable by a fine of not more than \$100 for each offence."

The "Shipping Act, 1916," as amended, is amended by inserting after section 14 a new section to read as follows:

4a. The board upon its own initiative may, or upon complaint, after due notice to all parties in interest and hearing, determine whether any person, not a citizen of the United States and in transportation by water of passengers or property—

has violated any provision of Section 14, or

is a party to any combination, agreement, or understanding, express or implied, that involves in respect to transportation of passengers or property between foreign ports, deferred rebates or other unfair practice designated in Section 14, and that excludes or discriminates upon equal terms with all other parties, thereto, a carrier by water, which is a citizen of the United States and has applied for such admission.

If the board determines that any such person has violated any provision or is a party to any such combination, agreement, or understanding, the board shall thereupon certify such fact to the Secretary of Commerce. The Secretary shall thereafter refuse such person the right of entry for any ship owned or operated by him or for any carrier directly or indirectly controlled by him, into any port of the United States, or any Territory, District, or possession thereof, unless he certifies that the violation has ceased or such combination, agreement, or understanding has been terminated."

. That from and after February 1, 1922, the coastwise laws of the United States shall extend to the island Territories and possessions of the United States not now covered thereby, and the President is directed prior to the expiration of such year to have established adequate steamship service at reasonable rates to accommodate the commerce and the passenger travel of said islands and to maintain and operate such service until it can be taken over and operated and maintained upon satisfactory terms by private capital and enterprise provided, That if adequate shipping service is not established by February 1, 1922, the President shall extend the period herein allowed for the establishment of such service in the case of any island Territory or possession for such time as may be necessary for the development of adequate shipping facilities therefor: Provided further That until Congress shall have authorized the registry as of the United States of vessels owned in the Philippine

Islands, the Government of the Philippine Islands is hereby authorized to adopt, from time to time, and enforce regulations governing the transportation of merchandise and passengers between ports or places in the Philippine Archipelago; and provided further, That the foregoing provisions of this section shall not take effect with reference to the Philippine Islands until the President of the United States after a full investigation of the local needs and conditions shall, by proclamation, declare that an adequate shipping service has been established as herein provided and fix a date for the going into effect of the same.

SEC. 22. That the Act entitled "An Act giving the United States Shipping Board power to suspend present provisions of law and permit vessels of foreign registry and foreign-built vessels admitted to American registry under the Act of August 18, 1914, to engage in the coastwise trade during the present war and for a period of one hundred and twenty days thereafter, except the coastwise trade with Alaska," approved October 6, 1917, is hereby repealed: Provided, That all foreign-built vessels admitted to American registry, owned on February 1, 1920, by persons citizens of the United States, and all foreign-built vessels owned by the United States at the time of the enactment of this Act, when sold and owned by persons, citizens of the United States, may engage in the coastwise trade so long as they continue in such ownership subject to the rules and regulations of such trade: Provided, That the board is authorized to issue permits for the carrying of passengers in foreign ships if it deems it necessary so to do, operating between the Territory of Hawaii and the Pacific coast up to February 1, 1922.

SEC. 23. That the owner of a vessel documented under the laws of the United States and operated in foreign trade shall, for each of the ten taxable years while so operated, beginning with the first taxable year ending after the enactment of this Act, be allowed as a deduction for the purpose of ascertaining his net income subject to the war-profits and excess-profits taxes imposed by Title III of the Revenue Act of 1918 and amount equivalent to the net earnings of such vessel during such taxable year, determined in accordance with rules and regulations to be made by the board: Provided, That such owner shall not be entitled to such deduction unless during such taxable year he invested, or set aside under rules and regulations to be made by the board in a trust fund for investment, in the building in shipyards in the United States of new vessels of a

kind approved by the board, an amount, to be determined
cretary of the Treasury and certified by him to the board,
t to the war-profits and excess-profits taxes that would
i payable by such owner on account of the net earnings of
els but for the deduction allowed under the provisions of
on: Provided further, That at least two-thirds of the cost
essel constructed under this paragraph shall be paid for out
dinary funds or capital of the person having such vessel
ed.

uring the period of ten years from the enactment of this
erson a citizen of the United States who may sell a vessel
ed under the laws of the United States and built prior to
l, 1914, shall be exempt from all income taxes that would
le upon any of the proceeds of such sale under Title I,
and Title III of the Revenue Act of 1918 if the entire
thereof shall be invested in the building of new ships in
shipyards, such ships to be documented under the laws
ited States and to be of a type approved by the board.

. That all mails of the United States shipped or carried
shall, if practicable, be shipped or carried on American-
els documented under the laws of the United States. No
ereafter made with the Postmaster General for carrying
vessels so built and documented shall be assigned or sublet,
ails covered by such contract shall be carried on any ves-
built and documented. No money shall be paid out of
ury of the United States on or in relation to any such
or carrying mails on vessels so built and documented when
ract has been assigned or sublet or when mails covered
contract are in violation of the terms thereof carried on any
so built and documented. The board and the Postmaster
in aid of the development of a merchant marine adequate
e for the maintenance and expansion of the foreign or
trade of the United States and of a satisfactory postal
connection therewith, shall from time to time determine
nd reasonable rate of compensation to be paid for such
nd the Postmaster General is hereby authorized to enter
acts within the limits of appropriations made therefor by
to pay for the carrying of such mails in such vessels at
Nothing herein shall be affected by the Act entitled "An
rovide for ocean mail service between the United States

and foreign ports, and to promote commerce," approved March 3, 1891.

SEC. 25. That for the classification of vessels owned by the United States, and for such other purposes in connection therewith as are the proper functions of a classification bureau, all departments, boards, bureaus, and commissions of the Government are hereby directed to recognize the American Bureau of Shipping as their agency so long as the American Bureau of Shipping continues to be maintained as an organization which has no capital stock and pays no dividends: Provided, That the Secretary of Commerce and the chairman of the board shall each appoint one representative who shall represent the Government upon the executive committee of the American Bureau of Shipping, and the bureau shall agree that these representatives shall be accepted by them as active members of such committee. Such representatives of the Government shall serve without any compensation, except necessary traveling expenses: Provided further, That the official list of merchant vessels published by the Government shall hereafter contain a notation clearly indicating all vessels classed by the American Bureau of Shipping.

SEC. 26. That cargo vessels documented under the laws of the United States may carry not to exceed sixteen persons in addition to the crew between any ports or places in the United States or its Districts, Territories, or possessions, or between any such port or place and any foreign port, or from any foreign port to another foreign port, and such vessels shall not be held to be "passenger vessels" or "vessels carrying passengers" within the meaning of the inspection laws and the rules and regulations thereunder: Provided, that nothing herein shall be taken to exempt such vessels from the laws, rules, and regulations respecting life-saving equipment: Provided further, That when any such vessel carries persons other than the crew as herein provided for, the owner, agent, or master of the vessel shall first notify such persons of the presence on board of any dangerous articles, as defined by law, or of any other condition or circumstance which would constitute a risk of safety for passenger or crew.

The privilege bestowed by this section on vessels of the United States shall be extended in so far as the foreign trade is concerned to the cargo vessels of any nation which allows the like privilege to

irgo vessels of the United States in trades not restricted to vessels under its own flag.

Failure on the part of the owner, agent, or master of the vessel to give such notice shall subject the vessel to a penalty of \$500, which may be mitigated or remitted by the Secretary of Commerce upon a proper representation of the facts.

SEC. 27. That no merchandise shall be transported by water, or by land and water, on penalty of forfeiture thereof, between points in the United States, including Districts, Territories, and possessions thereof embraced within the coastwise laws, either directly or via a foreign port, or for any part of the transportation, in any other vessel than a vessel built in and documented under the laws of the United States and owned by persons who are citizens of the United States, or vessels to which the privilege of engaging in the coastwise trade is extended by Sections 18 or 22 of this Act: Provided, That this section shall not apply to merchandise transported between points within the continental United States, excluding Alaska, over through routes heretofore or hereafter recognized by the Interstate Commerce Commission for which routes rate tariffs have been established: shall hereafter be filed with said commission when such routes run in part over Canadian rail lines and their own or other connecting water facilities: Provided further, That this section shall not become effective upon the Yukon River until the Alaska Railroad shall be completed and the Shipping Board shall find that proper facilities will be furnished for transportation by persons citizens of the United States for properly handling the traffic.

SEC. 28. That no common carrier shall charge, collect, or receive, for transportation subject to the Interstate Commerce Act of persons or property, under any joint rate, fare, or charge, or under any export, import, or other proportional rate, fare, or charge, which is based in whole or in part on the fact that the persons or property affected thereby is to be transported to, or has been transported from, any port in a possession or dependency of the United States, or in a foreign country, by a carrier by water in foreign commerce, at a lower rate, fare, or charge than that charged, collected, or received by it for the transportation of persons, or of a like kind of property, for the same distance, in the same direction, and over the same route, in connection with commerce wholly within the United States, unless the vessel so transporting such persons or property, or unless it was at the time of such transportation by water, docu-

mented under the laws of the United States. Whenever the board is of the opinion, however, that adequate shipping facilities to or from any port in a possession or dependency of the United States or a foreign country are not afforded by vessels so documented, it shall certify this fact to the Interstate Commerce Commission, and the commission may, by order, suspend the operation of the provisions of this section with respect to the rates, fares, and charges for the transportation by rail of persons and property transported from, or to be transported, to such ports, for such length of time and under such terms and conditions as it may prescribe in such order, or in any order supplemental thereto. Such suspension of operation of the provisions of this section may be terminated by order of the commission whenever the board is of the opinion that adequate shipping facilities by such vessels to such ports are afforded and shall so certify to the commission.

SEC. 29. (a) That whenever used in this section—

(1) The term "association" means any association, exchange, pool, combination, or other arrangement for concerted action; and

(2) The term "Marine Insurance Companies" means any persons, companies, or associations authorized to write marine insurance or re-insurance under the laws of the United States or of a State, Territory, District, or possession thereof.

(b) Nothing contained in the "anti-trust laws" as designated in Section 1 of the Act entitled "An Act to supplement existing laws against unlawful restraints and monopolies, and for other purposes," approved October 15, 1914, shall be construed as declaring illegal an association entered into by marine insurance companies for the following purposes: To transact a marine insurance and reinsurance business in the United States and in foreign countries and to re-insure or otherwise apportion among its membership the risks undertaken by such association or any of the component members.

SEC. 30. Subsec. A. That this section may be cited as the "Ship Mortgage Act, 1920."

Definitions

Subsec. B. When used in this section—

(1) The term "document" includes registry and enrollment and license;

(2) The term "documented" means registered or enrolled or li-

censed under the laws of the United States whether permanently or temporarily;

(3) The term "port of documentation" means the port at which the vessel is documented in accordance with law;

(4) The term "vessel of the United States" means any vessel documented under the laws of the United States and such vessel shall be held to continue to be so documented until its documents are surrendered with the approval of the board; and

(5) The term "mortgagee" in the case of a mortgage involving a trust deed and a bond issue thereunder means the trustee designated in such deed.

Recording of Sales, Conveyances, and Mortgages of Vessels of the United States.

Subsec. C. (a) No sale, conveyance, or mortgage which, at the time such sale, conveyance, or mortgage is made includes a vessel of the United States or any portion thereof, as the whole or any part of the property sold, conveyed, or mortgaged shall be valid, in respect to such vessel, against any person other than the grantor or mortgagor, his heir or devisee, and a person having actual notice thereof, until such bill of sale, conveyance or mortgage is recorded in the office of the collector of customs of the port of documentation of such vessel as provided in subdivision (b) of this subsection.

(b) Such collector of customs shall record bills of sale, conveyances, and mortgages, delivered to him, in the order of their reception, in books to be kept for that purpose and indexed to show—

(1) The name of the vessel;

(2) The names of the parties to the sale, conveyance, or mortgage;

(3) The time and date of reception of the instrument;

(4) The interest in the vessel so sold, conveyed, or mortgaged; and

. (5) The amount and date of maturity of the mortgage.

Subsec. D. (a) A valid mortgage which, at the time it is made includes the whole of any vessel of the United States of 200 gross tons and upward, shall in addition have, in respect to such vessel and as of the date of the compliance with all the provisions of this subdivision, the preferred status given by the provisions of subsection M, if—

(1) The mortgage is indorsed upon the vessel's documents in accordance with the provisions of this section;

(2) The mortgage is recorded as provided in subsection C, together with the time and date when the mortgage is so indorsed;

(3) An affidavit is filed with the record of such mortgage to the effect that the mortgage is made in good faith and without any design to hinder, delay, or defraud any existing or future creditor of the mortgagor or any lienor of the mortgaged vessel;

(4) The mortgage does not stipulate that the mortgagee waives the preferred status thereof; and

(5) The mortgagee is a citizen of the United States.

(b) Any mortgage which complies in respect to any vessel with the conditions enumerated in this subsection is hereafter in this section called a "preferred mortgage" as to such vessel.

(c) There shall be indorsed upon the documents of a vessel covered by a preferred mortgage—

(1) The names of the mortgagor and mortgagee;

(2) The time and date the indorsement is made;

(3) The amount and date of maturity of the mortgage; and

(4) Any amount required to be indorsed by the provisions of subdivision (e) or (f) of this subsection.

(d) Such indorsement shall be made (1) by the collector of customs of the port of documentation of the mortgaged vessel, or (2) by the collector of customs of any port in which the vessel is found, if such collector is directed to make the indorsement by the collector of customs of the port of documentation; and no clearance shall be issued to the vessel until such indorsement is made. The collector of customs of the port of documentation shall give such direction by wire or letter at the request of the mortgagee and upon the tender of the cost of communication of such direction. Whenever any new document is issued for the vessel, such indorsement shall be transferred to and indorsed upon the new document by the collector of customs.

(e) A mortgage which includes property other than a vessel shall not be held a preferred mortgage unless the mortgage provides for the separate discharge of such property by the payment of a specified portion of the mortgage indebtedness. If a preferred mortgage so provides for the separate discharge, the amount of the portion of such payment shall be indorsed upon the documents of the vessel.

(f) If a preferred mortgage includes more than one vessel and provides for the separate discharge of each vessel by the payment of a portion of the mortgage indebtedness, the amount of such portion of such payment shall be indorsed upon the documents of the vessel. In case such mortgage does not provide for the separate discharge of a vessel and the vessel is to be sold upon the order of a district court of the United States in a suit in rem in admiralty, the court shall determine the portion of the mortgage indebtedness increased by 20 per cent. (1) which, in the opinion of the court, the proximate value of the vessel bears to the approximate value of the vessels covered by the mortgage, and (2) upon the payment which the vessel shall be discharged from the mortgage.

Subsec. E. The collector of customs upon the recording of a preferred mortgage shall deliver two certified copies thereof to the mortgagor who shall place, and use due diligence to retain, one copy aboard the mortgaged vessel and cause such copy and the documents of the vessel to be exhibited by the master to any person having business with the vessel, which may give rise to a maritime lien on the vessel or to the sale, conveyance, or mortgage thereof. The master of the vessel shall, upon the request of any such person, exhibit to him the documents of the vessel and the copy of any preferred mortgage of the vessel placed on board thereof.

Subsec. F. The mortgagor (1) shall upon request of the mortgagee, disclose in writing to him prior to the execution of any preferred mortgage, the existence of any maritime lien, prior mortgage, or other obligation or liability upon the vessel to be mortgaged, that is known to the mortgagor, and (2), without the consent of the mortgagee, shall not incur, after the execution of such mortgage and before the mortgagee has had a reasonable time in which to record the mortgage and have indorsements in respect thereto made upon the documents of the vessel, any contractual obligation creating a lien upon the vessel other than a lien for wages of stevedores when employed directly by the owner, operator, master, ship's husband, or agent of the vessel, for wages of the crew of the vessel, for general average, or for salvage, including contract salvage, in respect to the vessel.

Subsec. G. (a) The collector of customs of the port of documentation shall, upon the request of any person, record notice of a claim of a lien upon a vessel covered by a preferred mortgage, together with the nature, date of creation, and amount of the lien,

and the name and address of the person. Any person who has caused notice of his claim of lien to be so recorded shall, upon a discharge in whole or in part of the indebtedness, forthwith file with the collector of customs a certificate of such discharge. The collector of customs shall thereupon record the certificate.

(b) The mortgagor, upon a discharge in whole or in part of the mortgage indebtedness, shall forthwith file with the collector of customs for the port of documentation of the vessel, a certificate of such discharge. Such collector of customs shall thereupon record the certificate. In case of a vessel covered by a preferred mortgage, the collector of customs at the port of documentation shall (1) indorse upon the documents of the vessel, or direct the collector of customs at any port in which the vessel is found to so indorse the fact of such discharge, and (2) shall deny clearance to the vessel until such indorsement is made.

Subsec. H. (a) No bill of sale, conveyance, or mortgage shall be recorded unless it states the interest of the grantor or mortgagor in the vessel, and the interest so sold, conveyed, or mortgaged.

(b) No bill of sale, conveyance, mortgage, notice of claim of lien, or certificate of discharge thereof, shall be recorded unless previously acknowledged before a notary public or other officer authorized by a law of the United States, or of a State, Territory, District, or possession thereof, to take acknowledgment of deeds.

(c) In case of a change in the port of documentation of a vessel of the United States, no bill of sale, conveyance, or mortgage shall be recorded at the new port of documentation unless there is furnished to the collector of customs of such port, together with the copy of the bill of sale, conveyance, or mortgage to be recorded, a certified copy of the record of the vessel at the former port of documentation furnished by the collector of such port. The collector of customs at the new port of documentation is authorized and directed to record such certified copy.

(d) A preferred mortgage may bear such rate of interest as is agreed by the parties thereto.

Subsec. I. Each collector of customs shall permit records made under the provisions of this section to be inspected during office hours, under such reasonable regulations as the collector may establish. Upon the request of any person the collector of customs shall furnish him from the records of the collector's office (1) a certificate setting forth the names of the owners of any vessel, the interest

held by each owner, and the material facts as to any bill of sale or conveyance of, any mortgage covering, or any lien or other incumbrance upon a specified vessel, (2) a certified copy of any bill of sale, conveyance, mortgage, notice of claim of lien, or certificate of discharge in respect to such vessel, or (3) a certified copy as required by subdivision (c) of subsection H. The collector of customs shall collect a fee for any bill of sale, conveyance, or mortgage recorded, or any certificate or certified copy furnished, by him, in the amount of 20 cents a folio with a minimum charge of \$1. All such fees shall be covered into the Treasury of the United States as miscellaneous receipts.

Penalties.

Subsec. J. (a) If the master of the vessel willfully fails to exhibit the documents of the vessel or the copy of any preferred mortgage thereof, as required by subsection E, the board of local inspectors of vessels having jurisdiction of the license of the master, may suspend or cancel such license, subject to the provisions of "An Act to provide for appeals from decision of boards of local inspectors of vessels, and for other purposes," approved June 10, 1918.

(b) A mortgagor who, with intent to defraud, violates any provision of subsection F, and if the mortgagor is a corporation or association, the president or other principal executive officer of the corporation or association, shall upon conviction thereof be held guilty of a misdemeanor and shall be fined not more than \$1,000 or imprisoned not more than two years, or both. The mortgaged indebtedness shall thereupon become immediately due and payable at the election of the mortgagee.

(c) If any person enters into any contract secured by, or upon the credit of, a vessel of the United States covered by a preferred mortgage, and suffers pecuniary loss by reason of the failure of the collector of customs, or any officer, employee, or agent thereof, properly to perform any duty required of the collector under the provisions of this section, the collector of customs shall be liable to such person for damages in the amount of such loss. If any such person is caused any such loss by reason of the failure of the mortgagor, or master of the mortgaged vessel, or any officer, employee, or agent thereof, to comply with any provision of subsection E or F or to file an affidavit as required by subdivision (a) of subsection

D, correct in each particular thereof, the mortgagor shall be liable to such person for damages in the amount of such loss. The district courts of the United States are given jurisdiction (but not to the exclusion of the courts of the several States, Territories, Districts, or possessions) of suits for the recovery of such damages, irrespective of the amount involved in the suit or the citizenship of the parties thereto. Such suit shall be begun by personal service upon the defendant within the limits of the district. Upon judgment for the plaintiff in any such suit, the court shall include in the judgment an additional amount for costs of the action and a reasonable counsel's fee, to be fixed by the court.

Foreclosure of Preferred Mortgages.

Subsec. K. A preferred mortgage shall constitute a lien upon the mortgaged vessel in the amount of the outstanding mortgage indebtedness secured by such vessel. Upon the default of any term or condition of the mortgage, such lien may be enforced by the mortgagee by suit in rem in admiralty. Original jurisdiction of all such suits is granted to the district courts of the United States exclusively. In addition to any notice by publication, actual notice of the commencement of any such suit shall be given by the libellant, in such manner as the court shall direct, to (1) the master, other ranking officer, or caretaker of the vessel, and (2) any person who has recorded a notice of claim of an undischarged lien upon the vessel, as provided in subsection G, unless after search by the libellant satisfactory to the court, such mortgagor, master, other ranking officer, caretaker, or claimant is not found within the United States. Failure to give notice to any such person, as required by this subsection, shall not constitute a jurisdictional defect; but the libellant shall be liable to such person for damages in the amount of his interest in the vessel terminated by the suit. Suit in personam for the recovery of such damages may be brought in accordance with the provisions of subdivision (c) of subsection J.

Subsec. L. In any suit in rem in admiralty for the enforcement of the preferred mortgage lien, the court may appoint a receiver and in its discretion, authorize the receiver to operate the mortgaged vessel. The marshal may be authorized and directed by the court to take possession of the mortgaged vessel notwithstanding the fact that the vessel is in the possession or under the control of any person claiming a possessory common-law lien.

Subsec. M. (a) When used hereinafter in this section, the term "preferred maritime lien" means (1) a lien arising prior in time to the recording and indorsement of a preferred mortgage in accordance with the provisions of this section; or (2) a lien for damages arising out of tort, for wages of a stevedore when employed directly by the owner, operator, master, ship's husband, or agent of the vessel, for wages of the crew of the vessel, for general average, and for salvage, including contract salvage.

(b) Upon the sale of any mortgaged vessel by order of a district court of the United States in any suit in rem in admiralty for the enforcement of a preferred mortgage lien thereon, all preexisting claims in the vessel, including any possessory common-law lien of which a lienor is deprived under the provisions of subsection L shall be held terminated and shall thereafter attach, in like amount and in accordance with their respective priorities, to the proceeds of the sale; except that the preferred mortgage lien shall have priority over all claims against the vessel, except (1) preferred maritime liens, and (2) expenses and fees allowed and costs taxed, by the court.

Subsec. N. (a) Upon the default of any term or condition of a preferred mortgage upon a vessel, the mortgagee may, in addition to all other remedies granted by this section, bring suit in personam in admiralty in a district court of the United States, against the mortgagor for the amount of the outstanding mortgage indebtedness secured by such vessel or any deficiency in the full payment thereof.

(b) This section shall not be construed, in the case of a mortgage covering, in addition to vessels, realty or personality other than vessels, or both, to authorize the enforcement by suit in rem in admiralty of the rights of the mortgagee in respect to such realty or personality other than vessels.

Transfers of Mortgaged Vessels and Assignment of Vessel Mortgages.

Subsec. O. (a) The documents of a vessel of the United States covered by a preferred mortgage may not be surrendered (except in the case of the forfeiture of the vessel or its sale by the order of any court of the United States or any foreign country) without the approval of the board. The board shall refuse such approval unless the mortgagee consents to such surrender.

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(b) The interest of the mortgagee in a vessel of the United States covered by a mortgage, shall not be terminated by the forfeiture of the vessel for a violation of any law of the United States, unless the mortgage authorized, consented, or conspired to effect the illegal act, failure, or omission which constituted such violation.

(c) Upon the sale of any vessel of the United States covered by a preferred mortgage, by order of a district court of the United States in any suit in rem in admiralty for the enforcement of a maritime lien other than a preferred maritime lien, the vessel shall be sold free from all preexisting claims thereon; but the court shall, upon the request of the mortgagee, the libellant, or any intervenor, require the purchaser at such sale to give and the mortgagor to accept a new mortgage of the vessel for the balance of the term of the original mortgage. The conditions of such new mortgage shall be the same, so far as practicable, as those of the original mortgage and shall be subject to the approval of the court. If such new mortgage is given, the mortgagee shall not be paid from the proceeds of the sale and the amount payable as the purchase price shall be held diminished in the amount of the new mortgage indebtedness.

(d) No rights under a mortgage of a vessel of the United States shall be assigned to any person not a citizen of the United States without the approval of the board. Any assignment in violation of any provision of this section shall be void.

(e) No vessel of the United States shall be sold by order of a district court of the United States in any suit in rem in admiralty to any person not a citizen of the United States.

Maritime Liens for Necessaries.

Subsec. P. Any person furnishing repairs, supplies, towage, use of dry dock or marine railway, or other necessaries, to any vessel, whether foreign or domestic, upon the order of the owner of such vessel, or of a person authorized by the owner, shall have a maritime lien on the vessel, which may be enforced by suit in rem, and it shall not be necessary to allege or prove that credit was given to the vessel.

Subsec. Q. The following persons shall be presumed to have authority from the owner to procure repairs, supplies, towage, use of dry dock or marine railway, and other necessaries for the vessel: The managing owner, ship's husband, master, or any person to

the management of the vessel at the port of supply is in-
No person tortiously or unlawfully in possession or charge
essel shall have authority to bind the vessel.

ec. R. The officers and agents of a vessel specified in sub-
Q shall be taken to include such officers and agents when
ed by a charterer, by an owner pro hac vice, or by an agreed
ier in possession of the vessel; but nothing in this section
: construed to confer a lien when the furnisher knew, or by
e of reasonable diligence could have ascertained, that be-
)f the terms of a charter party, agreement for sale of the
or for any other reason, the person ordering the repairs,
, or other necessaries was without authority to bind the ves-
efore.

ec. S. Nothing in this section shall be construed to prevent
nisher of repairs, supplies, towage, use of dry dock or ma-
ilway, or other necessaries, or the mortgagee, from waiving
it to a lien, or in the case of a preferred mortgage lien, to
ferred status of such lien, at any time, by agreement or
ise; and this section shall not be construed to affect the
f law now existing in regard to (1) the right to proceed
the vessel for advances, (2) laches in the enforcement of
pon vessels, (3) the right to proceed in personam, (4) the
f preferred maritime liens among themselves, or (5) prior-
between maritime liens and mortgages, other than preferred
ges, upon vessels of the United States.

ec. T. This section shall supersede the provisions of all State
: conferring liens on vessels, in so far as such statutes pur-
create rights of action to be enforced by suits in rem in
ity against vessels for repairs, supplies, towage, use of dry
r marine railway, and other necessaries.

Miscellaneous Provisions.

ec. U. This section shall not apply (1) to any existing mort-
or (2) to any mortgage hereafter placed on any vessel now
an existing mortgage, so long as such existing mortgage re-
undischarged.

ec. V. The Secretary of Commerce is authorized and di-
to furnish collectors of customs with all necessary books and
, and with certificates of registry and of enrollment and li-

cense in such form as provides for the making of all indorsements thereon required by this section.

Subsec. W. The Secretary of Commerce is authorized to make such regulations in respect to the recording and indorsing of mortgages covering vessels of the United States as he deems necessary to the efficient execution of the provisions of this section.

Subsec. X. Sections 4192 to 4196, inclusive, of the Revised Statutes of the United States, as amended, and the act entitled "An Act relating to liens on vessels for repairs, supplies, or other necessities," approved June 23, 1910, are repealed. This section, however, so far as not inconsistent with any of the provisions of law so repealed, shall be held a reenactment of such repealed law, and any right or obligation based upon any provision of such law and accruing prior to such repeal, may be prosecuted in the same manner and to the same effect as if this act had not been passed.

SEC. 31. That Section 4530 of the Revised Statute of the United States is amended to read as follows:

"Sec. 4530. Every seaman on a vessel of the United States shall be entitled to receive on demand from the master of the vessel to which he belongs one-half part of the balance of his wages earned and remaining unpaid at the time when such demand is made at every port where such vessel, after the voyage has been commenced, shall load or deliver cargo before the voyage is ended, and all stipulations in the contract to the contrary shall be void: Provided, Such a demand shall not be made before the expiration of, nor oftener than once in, five days nor more than once in the same harbor on the same entry. Any failure on the part of the master to comply with this demand shall release the seaman from his contract and he shall be entitled to full payment of wages earned. And when the voyage is ended every such seaman shall be entitled to the remainder of the wages which shall be then due him, as provided in Section 4529 of the Revised Statutes: Provided further, That notwithstanding any release signed by any seaman under Section 4552 of the Revised Statutes any court having jurisdiction may upon good cause shown set aside such release and take such action as justice shall require: And provided further, That this section shall apply to seaman on foreign vessels while in harbors of the United States, and the courts of the United States shall be open to such seamen for its enforcement."

SEC. 32. That paragraph (a) of Section 10 of the act entitled

"An Act to remove certain burdens on the American merchant marine and encourage the American foreign carrying trade, and for other purposes," approved June 26, 1884, as amended, is hereby amended to read as follows:

Sec. 10. (a) That it shall be, and is hereby, made unlawful in any case to pay any seaman wages in advance of the time when he has actually earned the same, or to pay such advance wages, or to make any order, or not, or other evidence of indebtedness therefor to any other person, or to pay any person, for the shipment of seamen when payment is deducted or to be deducted from a seaman's wages. Any person violating any of the foregoing provisions of this section shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by a fine of not less than \$25 nor more than \$100, and may also be imprisoned for a period of not exceeding six months, at the discretion of the court. The payment of such advance wages or allotment, whether made within or without the United States or Territory subject to the jurisdiction thereof, shall in no case except as herein provided absolve the vessel or the master or the owner thereof from the full payment of wages after the same shall have been actually earned, and shall be no defense to a libel suit or action for the recovery of such wages. If any person shall demand or receive, either directly or indirectly, from any seaman or other person seeking employment, as seaman, or from any person on his behalf, any remuneration whatever for providing him with employment, he shall for every such offense be deemed guilty of a misdemeanor and shall be imprisoned not more than six months or fined not more than \$500."

Sec. 33. That Section 20 of such Act of March 4, 1915, be, and is, amended to read as follows:

"Sec. 20. That any seaman who shall suffer personal injury in the course of his employment may, at his election, maintain an action for damages at law, with the right of trial by jury, and in such action all statutes of the United States modifying or extending the common-law right or remedy in cases of personal injury to railway employees shall apply; and in case of the death of any seaman as a result of any such personal injury the personal representative of such seaman may maintain an action for damages at law with the right of trial by jury, and in such action all statutes of the United States conferring or regulating the right of action for death in the case of railway employees shall be applicable.

Jurisdiction in such actions shall be under the court of the district in which the defendant employer resides or in which his principal office is located."

SEC. 34. That in the judgment of Congress, articles or provisions in treaties or conventions to which the United States is a party, which restrict the right of the United States to impose discriminating customs duties on imports entering the United States in foreign vessels and in vessels of the United States, and which also restrict the right of the United States to impose discriminatory tonnage dues on foreign vessels and on vessels of the United States entering the United States should be terminated, and the President is hereby authorized and directed within ninety days after this Act becomes law to give notice to the several Governments, respectively, parties to such treaties or conventions, that so much thereof as imposes any such restriction on the United States will terminate on the expiration of such periods as may be required for the giving of such notice by the provisions of such treaties or conventions.

SEC. 35. That the power and authority vested in the board by this Act, except as herein otherwise specifically provided, may be exercised directly by the board, or by it through the United States Shipping Board Emergency Fleet Corporation.

SEC. 36. That if any provision of this Act is declared unconstitutional or the application of any provision to certain circumstances be held invalid, the remainder of the Act and the application of such provisions to circumstances other than those as to which it is held invalid shall not be affected thereby.

SEC. 37. That when used in this Act, unless the context otherwise requires, the terms "person," "vessel," "documented under the laws of the United States," and "citizen of the United States" shall have the meaning assigned to them by Sections 1 and 2 of the "Shipping Act, 1916," as amended by this Act; the term "board" means United States Shipping Board; and the term "alien" means any person not a citizen of the United States.

SEC. 38. That Section 2 of the "Shipping Act, 1916," is amended to read as follows:

"Sec. 2. (a) That within the meaning of this Act no corporation, partnership, or association shall be deemed a citizen of the United States unless the controlling interest therein is owned by citizens of the United States, and, in the case of a corporation, unless its president and managing directors are citizens of the

States and the corporation itself is organized under the the United States or of a State, Territory, District, or in thereof; but in the case of a corporation, association, or ship operating any vessel in the coastwise trade the amount est required to be owned by citizens of the United States 75 per centum.

The controlling interest in a corporation shall not be to be owned by citizens of the United States (a) if the majority of the stock thereof is not vested in such citizens in any trust or fiduciary obligations in favor of any person a citizen of the United States; or (b) if the majority of the owner in such corporation is not vested in citizens of the States; or (c) if through any contract or understanding it arranged that the majority of the voting power may be exercised directly or indirectly, in behalf of any person who is not of the United States; or (d) if by any other means whatontrol of the corporation is conferred upon or permitted exercised by any person who is not a citizen of the United

Seventy-five per centum of the interest in a corporation t be deemed to be owned by citizens of the United States he title to 75 per centum of its stock is not vested in such free from any trust or fiduciary obligation in favor of any ot a citizen of the United States; or (b) if 75 per centum of ing power in such corporation is not vested in citizens of ed States; or (c) if, through any contract or understanding arranged that more than 25 per centum of the voting power corporation may be exercised directly or indirectly, in beh- ny person who is not a citizen of the United States; or (d) y other means whatsoever control of any interest in the ion in excess of 25 per centum is conferred upon or perso be exercised by any person who is not a citizen of the States.

The provisions of this Act shall apply to receivers and of all persons to whom the Act applies, and to the suc- or assignees of such persons."

9. That this Act may be cited as the Merchant Marine D.

Approved: June 5, 1920.

APPENDIX H.

THE TRAMP STEAMER AND BULK CARGO CONFERENCE By-LAWS AND REGULATIONS

Object:

The conference, which is to be known as the Tramp Steamer Bulk Cargo Conference, is formed in pursuance of instructions issued by a duly authorized representative of the United States Shipping Board Emergency Fleet Corporation dated Washington, D. C. November 13th, 1920.

- (a) To create and maintain a better understanding between the Shipping Board officials and its Bulk Cargo operators as well as a means of contact between Shipping Board Agents.
- (b) To promote efficiency, and thereby reduce cost of operation, which should result in increased earnings.
- (c) To stabilize Bulk Cargo rates carried in tramp steamers out of United States ports destined to foreign ports (ports in the West Indies and Coastwise Trade excepted). Bulk cargoes are defined as follows:—Full cargoes of coal, grain, sulphur, phosphate rock; also lumber and/or ties and case oil, when carried under a duly signed Charter Party in accordance with customs of trade; and other commodities when agreed upon between berth and general cargo conference.

Membership:

The following shall be eligible for membership:
Managing Agents of Shipping Board steamers operating exclusively in Tramp Service (West Indies and Coastwise trade excepted) provided the agent registers with the Tramp Conference Secretary the name, tonnage, t. d. w. and position of each steamer employed or to be employed exclusively in tramp service.

**Executive Committee:*

Shall consist of a permanent Chairman and three members of the Conference; one member to hold office for three weeks,

I member for two weeks, and third member for one week; vacancies are to be filled by members of the Conference in alphabetical order.

Meeting of the Committee shall be held each business day if necessary.

A majority of the Committee present shall constitute a quorum.

Shipping Board Representation:

The United States Shipping Board reserves the right to designate a representative to represent the Shipping Board at all meetings of the Conference as well as all Executive Committee and committee meetings.

Headquarters of Conference:

The headquarters of the Conference shall be in the New York office, Room 303, of the United States Shipping Board.

Travel, etc.

Convenience and rent shall be for Shipping Board account.

The Secretary shall keep a record of all meetings and shall, immediately thereafter, send a copy of all minutes and resolutions passed to each member; also to the United States Shipping Board.

Meetings:

Meetings of the Conference at large may be called

By the Chairman, or in his absence

By any member of the Executive Committee with the approval of the majority of the Executive Committee, or by the Shipping Board's representative; at least twenty-four hours' notice to be given.

Members only and Shipping Board representatives shall be permitted at the meetings, but by unanimous consent others may be invited to attend. Any member may at any time withdraw from the Conference upon giving notice in writing, notice of withdrawal being passed on by Conference to the Shipping Board.

These terms are only for the beginning, after organization all terms are for four weeks, one member's term expiring each week.

Commitments, Charters, etc.:

Members of Conference to submit proposed business to Secretary of Conference together with proforma statement of proposed voyage. The Executive Committee is authorized by the Shipping Board to use discretionary powers as to Charter rates to be accepted by the Agent, also as to form of Charter Party and conditions, granting of cable refusals and other details necessary and essential for prompt action to negotiate charters.

It is understood that all sets of the Bulk Cargo Conference are subject to approval of the Shipping Board and that any authority conferred upon them by these minutes or otherwise may be withdrawn at any time by the Shipping Board.

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